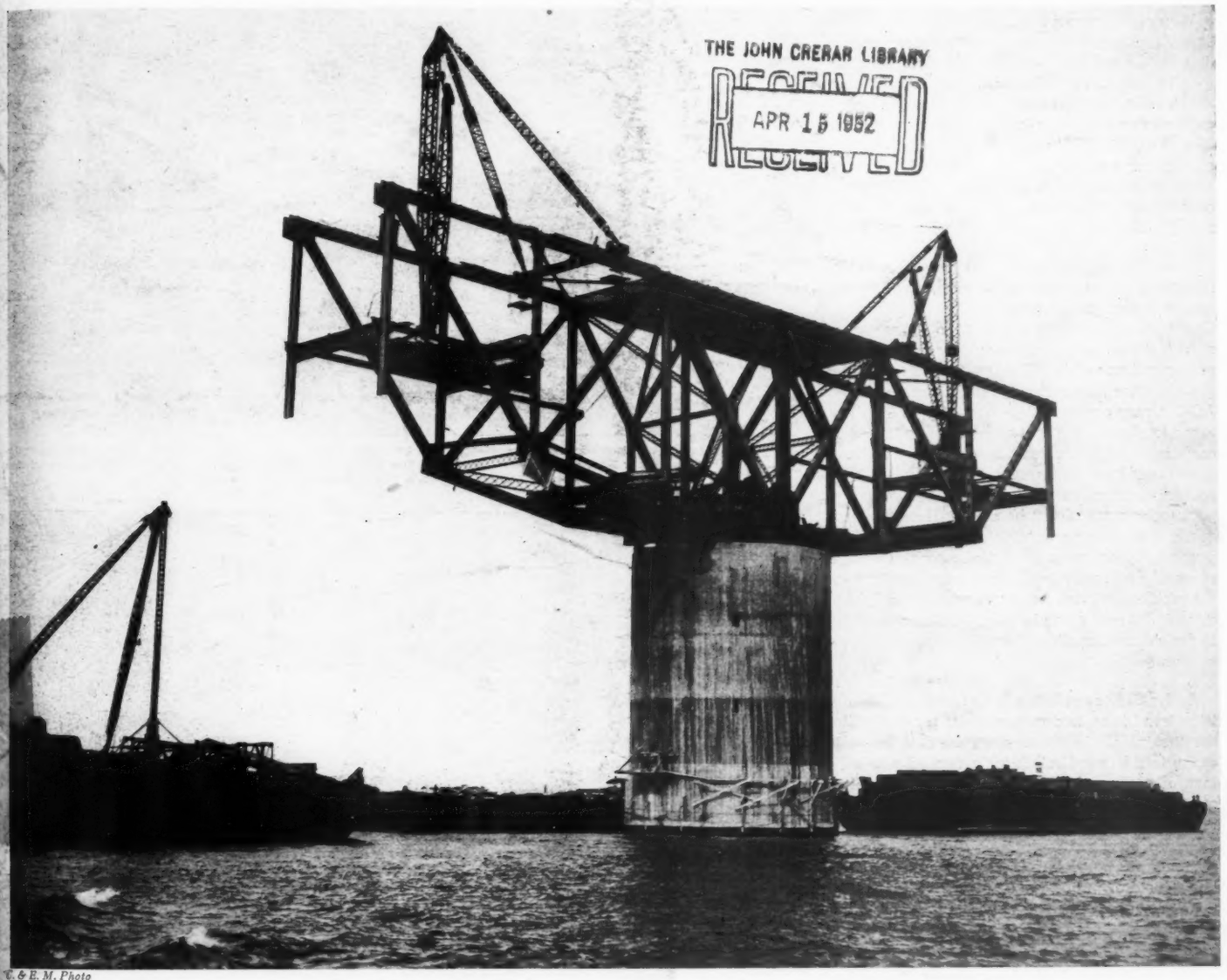
	Route to	See page
1		
2		
3		
4		
5		
6		

Contractors and Engineers Monthly

Vol. 49, No. 4 APRIL, 1952 $4 a year, 50 Cents a Copy

THE JOHN CREAR LIBRARY
RECEIVED
APR 15 1952



C. & E. M. Photo

Virginia Bridge Co. derricks cantilever out from pier 1-N in the York River, Va., to erect a 500-foot swing span of the George P. Coleman Memorial Bridge. See page 24.

• Sewer Tunnel
New expressway into Detroit meant relocating a sewer by tunneling into clay with air-powered knives. Page 5.

• Concrete Paving
Cinder subgrade is feature of a 4-lane-road improvement. Story on page 11.

Fly ash stops cement-aggregate reaction, according to tests. See page 121.

• Building Construction
New 1,000-bed hospital built on a rock formation has reinforced-concrete frame and floors. See page 18.

Million-barrel-a-year multi-building cement plant is speeded with slip forms. Story on page 39.

• York River Bridge
Three different steel-erection methods were used. Story and pix on page 24.

Covering the Field

• Meeting Reports
AGC members get hint of better days coming—for materials. Page 30.

ACI reviews and analyzes latest concrete design and construction. Page 93.

AHONAS delegates demand decontrol of steel at Atlantic City meeting. Page 104.

• Highway Maintenance
Maintenance men combine with contractors and by stage construction keep Ozark Mountain highways up to date. Page 35.

• Road-Base Construction
Local sand-clay laid as base, primed with RC-1S and given double bituminous surface treatment. Page 47.

• Powerhouse Concreting
Forty concrete pours reduced to two by use of Prepakt method. See how, page 52.

• Bituminous Paving
Porous plant-mix allows trees to grow in parking lot. Page 56.

Waterbound-macadam base topped with hot-mix in road relocation. Page 98.

• Pressure Pipeline
It loops Oklahoma City and makes adequate water supply certain. Page 60.

• Dredging for Fill
Winding highway is realigned by using hydraulic river fill. Page 65.

• Levee Construction
It took 8 borrow pits to supply embankment material for Louisville's new flood protection. Story on page 76.

• Navy Air Base
Cement concrete and bituminous concrete for jet runway. Story, page 80.

• Water Works
Ground water and intricate forms were the headaches. Page 87 reports.

• County Roads
Calcium-chloride treatment saves $65 a mile a year, according to performance studies summarized on page 107.

• Test Piles for Pier
Heavy spud jets through sand and clay to start holes for piles. Story, page 115.

(You will find an index on page 4)

NEWS AND VIEWS

of the construction industry at home and abroad—revised construction order, new good-roads movement, Idaho road test

Have you noticed the belt-loosening that has taken place recently in NPA officialdom? First sign we spotted was the **nod given to 646 new religious, municipal, and community projects** to start next July . . . then another **go-ahead for 186 commercial projects** to continue construction in July . . . then the new **liberalized construction order** CMP Regulation 6, about which more later . . . then word that **NPA may approve all applications on hand for new commercial construction in seven hardship areas:** Boston, New York, Washington (D. C.), Portland (Oreg.), Seattle (Wash.), San Francisco, and Los Angeles (in New York City, as an example of "hardship", 32,000 in the building trades were unemployed by February and 35,000 had left the city to seek work) . . . And so on, surprise after surprise, each more pleasant than the last.

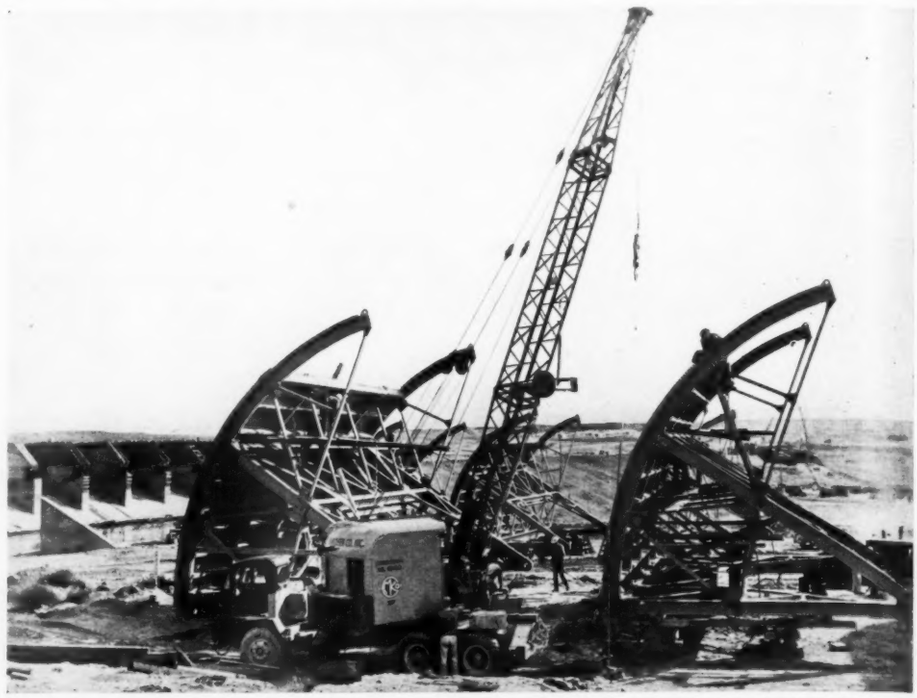
Why all this unexpected generosity? The "new time-phasing program for direct defense production by the military", we learned. And we take that to mean, in translation, that the **military doesn't need or can't use quite as much material quite as fast as NPA officials thought it would.** In any case, the NPA's material allotment for this quarter has been revised upward by 70,000 tons of structural steel to bring the total to 284,972 tons, of which 267,775 will go into industrial expansion and 17,197 into so-called commercial construction.

Specially hopeful is the fact that **the nod on third and fourth-quarter starts came far enough ahead of time to allow some advance planning.** One of the construction industry's biggest and most justified beefs has been: How can we plan projects when we don't know what material we'll get when the time comes to build them? A recent AGC survey confirms this uncertainty and reluctance to plan on the part of awarding authorities and investors in construction. Architects and engineers are feeling it as much as contractors—and so are structural-steel fabricators. The latter expect to be particularly hard-hit in late '52 and early '53, as the peak of defense construction is passed, if little or no nondefense construction is planned and ready to go. NPA sounds aware of the problem at least, for in authorizing last February the 646 new starts for July, it pointed proudly to the six months allowed for planning and preparation.

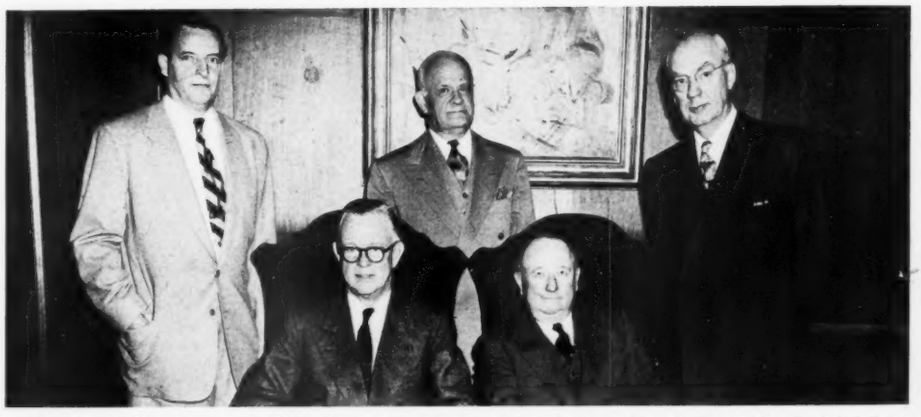
As for **CMP Regulation 6, Revised,** the liberalizing trend is quite apparent in its provisions. In the first place, it **allows more steel to be self-authorized for road building:** the exact figure is 25 tons of carbon steel, no more than 2 tons of it structural shapes, per entire highway project. The previous order permitted only 2 tons, including structural steel, per project per quarter . . . CMP-6 also **allows more steel to be self-authorized for nonindustrial, public, and commercial construction** (other than housing, recreational buildings, and roads): the amount in this case is 5 tons of carbon steel including 2 tons of structural steel, but no wide-flange beams. The previous order permitted only 2 tons of carbon steel including structural . . . The order also **allows builders to use foreign or salvage steel,** provided they won't need more copper or aluminum as a result . . . **Order M-100 on housing construction cuts copper, but not as much as was expected, and increases steel.** It permits 2,300 pounds of steel and 35 pounds of copper for single-family houses using steel water systems . . . and 1,950 pounds of steel and 135 pounds of copper for those with copper water systems. Home builders, too, may use foreign and salvage steel if they won't need more copper and aluminum as a result.

A really constructive step has been taken to put the nation's highways on a PAR with the nation's needs. In February, 40 national organizations representing road builders, motor-vehicle owners, and the automotive and allied industries met in Washington, D. C., and organized a committee to help get the nation out of its traffic muddle. The operating committee is called the National PAR (Project—Adequate Roads) Committee and its immediate objective is to persuade Government officials of the importance of roads in the nation's defense. Its long-range program is to stimulate continuing activity in highway improvement. **It hopes principally to arouse the public to action in a nation-wide good-roads movement.** It will meet again next month in conjunction with the Fourth Highway Transportation Congress in Washington. Since this may well be the unified, coordinated, solid-front action we've all been screaming for, keep your eye on PAR.

Construction is scheduled to start this month on the WASHO load-test road near Malad, Idaho. Its asphalt pavement will have five different thicknesses—6, 10, 14, 18, and 22 inches—and those conducting the test hope to find out how each thickness stands up under constant travel by trucks of varying load. Testing should begin in late summer and continue until about this time next year. Legislators are looking eagerly over the shoulders of engineers at this one, since they are the boys who will have to do the load regulating. However, Idaho State Highway Engineer E. V. Miller made this point in a recent speech: **It's not a simple matter of deciding a legal load limit for use on present roads.** Road men stress what heavy loading costs in road repairs; truckers stress what heavy loading saves them in operating costs; but "The public, which in the long run must pay both . . . costs, should be assured that it will not be called upon to shoulder an increase of road cost greater than the reduction in operating costs." The western test, companion piece of the Maryland test on concrete roads, which was run off in 1950, should furnish some of those badly needed cost data.



Using a Lorain MC-414 Moto-Crane, Morrison-Knudsen Co., Inc., Boise, Idaho, assembles control gates for the spillway of C. J. Strike Power Dam at Grandview, Idaho, on the Snake River. The $18,500,000 earth-fill dam is one of five being built for Idaho Power Co. and will have an 82,500-kw capacity.



Here is the operating committee of PAR, a new movement to get America out of her traffic muddle: Seated, left and right, are Arthur M. Hill, Chairman of the Executive Committee of Greyhound Corp. and President of the National Association of Motor Bus Operators; and Albert Bradley, Executive Vice President of General Motors and Chairman of the National Highway Users Conference which initiated the new movement. Standing, left to right, are Arthur C. Butler, Director of NHUC and permanent PAR Secretary; Paul Reinhold, President of the American Road Builders' Association; and L. S. Wescoat, President of The Pure Oil Co. and Chairman of the Board, National Petroleum Institute.

Refresher on CPR 93: Its Theory and History

Letchworth of OPS Reviews for AGC The Provisions of the Regulation And Explains Its Necessity

• THE theory and history of Ceiling Price Regulation 93 received a thorough going-over at the AGC convention in February. For those of our readers who may have missed the convention or the session devoted to CPR 93, we summarize here the address by Thomas G. Letchworth, Chief of the Construction Section, Buildings Materials Branch, Office of Price Stabilization.

Why CPR 93?

Any national program to stabilize prices had to take into consideration the construction industry, he said. For with its 367,000 contractors (U. S. and territories) and its $39.2 billion worth of activity in 1951, the construction industry vitally affects the national economy.

History of CPR 93

Mr. Letchworth reviewed the current price-stabilization program.

It began in January, 1951, when the General Ceiling Price Regulation was issued, fixing the prices of almost all goods and services at the highest price the seller had charged during a base period of December 19, 1950, through January 25, 1951. The construction industry operated under this general regulation until a new regulation covering the field of services was issued in May, 1951. This was CPR 34.

Under CPR 34, the base period remained the same; so did the method of determining ceiling prices. But the order carried a pricing formula and a clause permitting adjustments in case of hardship.

Compliance under the regulation was found to be difficult if not impossible. So OPS formed the Industry Advisory Committee, held two meetings, and issued CPR 93 on November 14, 1951.

Theory of CPR 93

In theory of pricing, the new regulation is something of a departure from other OPS regulations: it recognizes the use of current costs. This is only logical, said Mr. Letchworth, since the contractor must pay prevailing wage scales and buy his materials on the open market. If he is to survive he must recover these costs—plus a markup for overhead and profit—by a pass through to his principal or customer.

The base period used in CPR 93 is July 1, 1949, through June 24, 1950. A contractor may now select the highest markup for profit he had in effect during that period and apply nine-tenths of it to his current cost of labor, materials, and equipment. As for his markup for overhead—he may select the highest one he had in effect during the base period and apply it *without any reduction* to his current costs. (Those current costs, of course, must include wage rates and material and equipment prices not in excess of those currently authorized by the Wage Stabilization Board and the OPS.) Thus CPR 93 governs only a contractor's markup; it does not control his final or end prices. It also provides for and spells out the methods of pricing in most common use by the construction industry—lump sum, cost plus percentage, cost plus fixed fee, etc.

Mr. Letchworth explained that the figure of nine-tenths is not an arbitrary one but a careful estimate based on the increase of construction labor and material costs since the Korean war. He said that reducing the pre-Korea profit markup by 10 per cent will, when applied to current costs, net the contractor about the same dollar profit he enjoyed for a similar job during the base period.

CPR 34 Vs. CPR 93

As for the relationship between CPR 34 and CPR 93—the latter superseded the former as of November 20, 1951. However, a contractor need not have filed under CPR 34 before he can file or price under CPR 93; or if he established ceiling prices under 34 and prefers to stick to them, he may, changing over later if he wants to. But once he uses prices established under 93 he may not return to 34. In other words, he may not weave in and out of the two regulations.

Tractor Production Lags

Unless materials allotments are increased and better balanced, the production of tractors for all needs may have to be curtailed and manufacturers may have to lay off 30 to 40 per cent of their employees, the Tractor and Allied Equipment Industry told the NPA recently. The demand for tractors is running at a rate equal to a yearly output of 64,571 (the industry manufactured 48,561 tractors in 1951) while second-quarter material allotments will permit a yearly output of only 34,000. However, NPA told the committee it will ask for enough third-quarter materials to equal an annual output of 58,000 tractors.

Laying heavy-duty Texaco Asphaltic Concrete pavement on first section of New Jersey Route 43 (White Horse Pike) to be dualized. Old highway at left will be used by eastbound traffic exclusively; new pavement will serve westbound vehicles. Contractor, the Union Paving Company of Philadelphia.

State Highway 43, known as the White Horse Pike, is the most heavily traveled route across southern New Jersey. Last year, the State took the first step toward dualizing this highway, an improvement which means reduced travel time and increased safety for motorists. A new Texaco Asphaltic Concrete pavement was constructed parallel to the old highway between Egg Harbor City and Ellwood, a distance of five miles. Westbound traffic now uses the new pavement, while eastbound traffic has exclusive use of the old road.

Flexible-type construction was used throughout on the new section of the White Horse Pike. The resilient, heavy-duty Texaco Asphaltic Concrete wearing surface was laid in two courses, each 1½ inches thick, over a 4-inch waterbound macadam foundation. Underneath this is a gravel sub-base approximately 12 inches thick. The result is a pavement well able to withstand the continuous stream of traffic, including many trucks, which uses this highway. Free of joints, immune to ice control chemicals and with low susceptibility to temperature changes, this type of construction calls for a minimum of maintenance.

For turnpikes, important city streets, main highways and major airports, the flexible design employed by New Jersey on the White Horse Pike merits the serious consideration of engineers.

Faithfully yours TEXACO 50 for Fifty Years

Two helpful booklets on all types of Asphalt road and street construction can be obtained without charge or obligation by writing our nearest office.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York 17
Boston 16 (20 Providence St.) • **Chicago 4** (332 So. Michigan Ave.) • **Houston 1** (720 San Jacinto St.)
Jacksonville 2 (Hildebrandt Bldg.) • **Denver 1** (910 - 16th St.) • **Philadelphia 2** (1411 Walnut St.)
Richmond 19, Va. (Mutual Assurance Society Bldg.) • **Minneapolis 3** (Groveland Ave.-Clifton Pl.)

TEXACO REG. T. M.

TEXACO ASPHALT

Contractors and Engineers Monthly

A NATIONAL BUSINESS PAPER
For the Highway and Heavy-Construction Industry

Issued Monthly by Buttenheim-Dix Publishing Corp.
Editorial and Business Office: 470 Fourth Ave., New York 16, N. Y.

Acceptance under the Act of June 5, 1934, at Philadelphia, Pa., authorized March 26, 1945.

William H. Quirk, Eastern Editor
Michael A. Spronck, Catherine J. Hearn, Pauline E. Putnam
Associate Editors

Albert C. Smith, New Products Editor — Raymond P. Day, West-Coast Contributor

Edgar J. Buttenheim, President
George S. Conover, Vice President
Edwin Wagner, Secretary and Treasurer
Edward George Allen, Jr., Promotion Mgr.*

Donald V. Buttenheim, Publisher
Myron MacLeod, Advertising Manager
Albert T. Miller, Pacific Coast Manager
Edgar M. Buttenheim, Asst. Advertising Mgr.*

* On leave of absence for military duty.

BRANCH BUSINESS OFFICES

1719 Daily News Bldg. Chicago 6, Ill. — 420 Leader Bldg. Cleveland 14, Ohio — 2238 Ben Lomond Drive Los Angeles 27, Calif.

When requesting change of address, please send old as well as new address.

An Open Letter to Engineers

This year of The Centennial of Engineering seems an appropriate one in which to do a little soul-searching. The exposition in Chicago, September 3 to 13, will mark the 100th anniversary of the founding of the American Society of Civil Engineers, oldest national engineering society in the United States. It will offer the engineering profession a good opportunity to make known its contributions to the sociological and economic development of the nation and its people. But it should also be an appropriate time for the profession to examine evidence of its failings—principally its failure to achieve universal appreciation and recognition.

Has the engineer attained the professional status he deserves? In spite of his accomplishments and his contributions to better living at all levels of society, the answer is no! Government legislation in many cases classes engineering as a trade. In a number of states a tradesman or technician can call himself an engineer and offer to the public "engineering" services. The layman in America seldom holds engineers in the same esteem he does doctors or lawyers, though it is difficult to see that engineers contribute less to his well-being.

What, then, has kept engineering from complete and universal recognition as a profession, and the engineer from his due economic and social rewards? There is probably no one reason, but there is one so outstanding that all others seem to be merely contributory: The engineering profession lacks a voice that can speak with authority for *all* men in the field!

We can obtain this voice, first, by getting *all* engineers to join and actively support their professional societies and, second, by unifying the activities of these societies on a national level. It is easy to show that no organization in the profession today has all the members it should have. The five founder societies, federated through the Engineers Joint Council, represent the largest unified body in the profession, yet only 133,000 engineers of the nearly half-million in the country today are members of these societies. The National Society of Professional Engineers, in a similar position, has as members only 27,000 of 150,000 registered professional engineers in the country. Other engineering organizations are in an equally poor position. Literally tens of thousands of engineers are not members of any organization.

At the present time fifteen engineering groups are studying the possibility of unifying their activities through the Joint Council. This is a great stride forward, for—even with membership less than 100 per cent of the potential—combined they represent over 215,000 engineers. These organizations are making valiant efforts to elevate the position of the engineer in his society today. They are trying to unify the activities of all engineering groups; to raise the economic and social standing of the engineer; and to educate government, private business, and the public at large to the important part the engineer plays in modern society. But the strength of these organizations and the effectiveness of their programs for the betterment of the profession depend directly upon the strength and activity of each individual member.

Whether or not the engineer continues to place somewhere between a plumber and a doctor will depend entirely upon his own effort. There is much each of us can do, but one course of action is paramount: We must increase the membership in our national engineering organizations! Each man who claims the title of engineer should be an active member in his engineering societies and, if registered as a professional engineer, a member of the National Society of Professional Engineers. The Centennial Year offers a good opportunity to bring fellow engineers into local chapters and national organizations as *active*, participating members. Only as we succeed at this will the engineering profession have a voice—a voice to be heard by industry, by government, and by the nation at large—a voice that can command respect and recognition commensurate with the contribution engineers are making to society.

More scrap metal is needed again to maintain and increase high steel output. Scrap recovery is everybody's business nowadays, so get out your own scrap and help your neighbor to get out his. Talking about the steel shortage won't help at all, but getting out scrap metal will do a good deal. So be a scrapper!

Plan Ahead for Highways, Counsels AASHO President

"We already have about 40,000,000 passenger cars, 9,000,000 trucks, and 200,000 busses in operation, but, I am sorry to say, this tremendous traffic is using a highway system which is not adequate to carry it safely and efficiently." These words were spoken by Bertram D. Tallamy, President of the American Association of State Highway Officials and New York State Superintendent of Public Works, in an address he delivered recently before the Construction Advisory Council of the Chamber of Commerce of the United States. The situation, added Mr. Tallamy, is rapidly becoming worse, and unless something is done about it in the near future, it is going to be desperate.

In his talk, which urged the construction industry to support sound proposals for the revitalization of the nation's schools, hospitals, and highways, Mr. Tallamy declared that these three types of facilities have been public responsibilities so long that there is a tendency on the part of the general public to take them for granted. Stressing that this is particularly true of highways, Mr. Tallamy pointed out that the nation's Federal-Aid highway system is in need of $32,000,000,000 worth of work.

Long-range planning is the only answer, according to Mr. Tallamy. Anticipation of problems is half the battle, he believes, and he urged the construction industry to gather statistics, integrate them properly, look ahead, and prepare financial and other plans to meet the needs of the future. The responsibility of the construction industry does not end with the building of a facility—it is equally important to see that it functions smoothly and does not become run-down, Mr. Tallamy said. Finally, the construction industry should help in bringing present conditions to the attention of the public so that it will support state and national leaders who recognize the problem and are trying to do something about it.

Regular purchase of U. S. Defense Bonds means personal security as well as a share in the national security.

INDEX

Air Base Construction	80
Bituminous Paving	35, 47, 56, 98
Book Reviews	28, 55
Bridge Construction	24
Building Construction	18, 28, 39, 91
Care of Equipment	49
Concrete Paving	11, 121
Convention Calendar	33
County Roads	107
CPR Rulings	3
Distributor Doings	110
Dredging	65
Editorial	4
Engineers' Centennial	15
Grading	65
Highway Maintenance	35
Legal Decisions	43
Levee Construction	76
Meeting Reports	30, 93, 104
News and Views	2
Pier Construction	115
Pipe Laying	34, 60
Portrait in Print	71
Powerhouse Construction	52
Road-Base Construction	47, 107
Roadside Development	17, 56, 119
Safety and Health	59, 101
Sewer Construction	5
Test Piles	115
Tunnel Construction	5
Water Works Construction	87

Bridge Costs Are Soaring

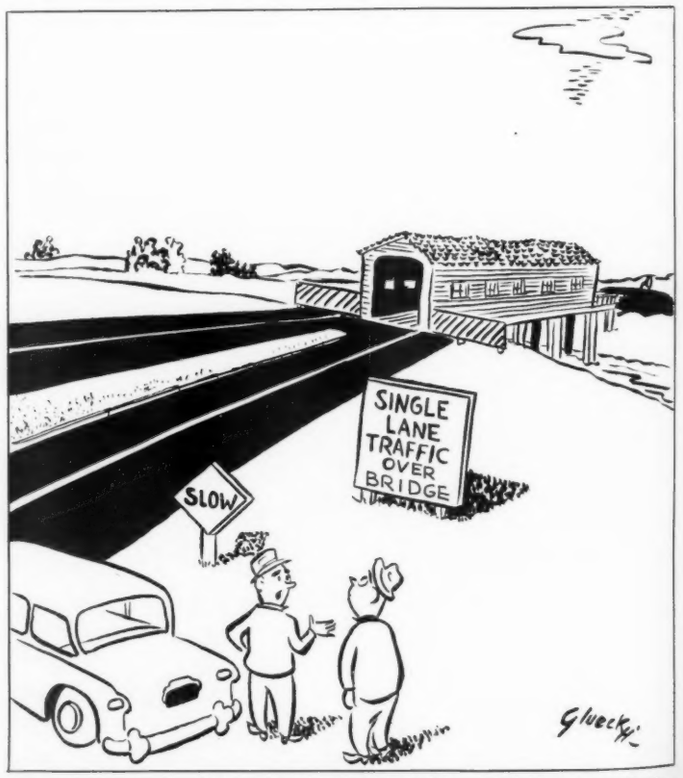
Like so many other things these days, bridges are coming more expensive. The community which built its bridge some 25 years ago and doesn't need to plan for one now, is luckier than it knows.

Last March Louis C. Duclos, Head Bridge Designer, Louisiana State Highway, presented before the convention of the American Society of Civil Engineers a comparison chart of bridge-building costs in 1927 and 1951, in which the figures tell their own tale:

	1927	1951
Open excavation, per cubic yard	$ 2.00	$ 3.70
Concrete above caisson, per cubic yard	17.00	50.00
Concrete in caisson, per cubic yard	10.00	60.00
Reinforcing steel, per pound	0.05	0.17
Structural steel, per pound	0.15	0.50

A Reader Service

You may wish to keep for reference various articles appearing in CONTRACTORS AND ENGINEERS MONTHLY and still not want to cut up your copy. Just let us know which articles you are interested in, and we'll be glad to send clippings, pasted on 8½ x 11 sheets in convenient form for insertion in your reference file.



"Just as we neared the old bridge, up springs the Chamber of Commerce, the Citizen's Alliance, and several formidable women from the Garden Club."

Tunnel Through Clay For Sewer Relocation

Power Knives Carve 30-Pound Chunks from Plastic Clay Face To Open Hole for 12-Foot-Diameter Trunk Sewer

By MICHAEL A. SPRONCK,
Associate Editor

• RELOCATING a section of brick sewer is just one of many jobs incidental to the building of the John C. Lodge Expressway, which will sweep into Detroit from the north as a six-lane limited-access artery, depressed in the downtown area, to relieve congestion now jamming surface streets. The sewer relocation was part of a $1,200,000 contract for construction of an underpass at the intersection of the expressway and Grand River Avenue, which is also a main 6-lane artery at surface grade in the heart of town.

The contract was awarded by the Michigan State Highway Department to L. A. Davidson of Lansing, Mich., for $1,114,781.98. Cost of the entire project is being shared by the various road agencies: 50 per cent Federal, 25 per cent state, 12½ per cent county, and 12½ per cent city funds. Direct supervision and inspection of this particular job was delegated by the Michigan State Highway Department to the Board of Wayne County Road Commissioners.

The existing 9½-foot-diameter brick trunk-line sewer runs under Grand River Avenue and intersects the expressway on a 42-degree skew; the upper half was above the express-highway subgrade. Its relocation at the intersection was necessary to take the storm-water flow under the expressway. The contract called for the construction of 118-foot twin-box sections, passing under the highway, and a 275-foot cylindrical section rejoining the old brick sewer. Inside dimension of the boxes is 7 feet 6 inches x 7 feet 3 inches. The cylindrical section has a 12-foot inside diameter. Twenty-foot transition sections provide for change in flow characteristics between the twin-box and 12-foot cylindrical sections. The terminal connections between the 12-foot concrete sewer and the existing 9½-foot sewer were built of brick on a curve with a 35-foot radius.

Initial Work

Work was started on August 23, 1951, a week after the award of contract, with the laying of 700 linear feet of 10-inch concrete pavement, 74 to 84 feet wide, in an arc around the work site. Barricades diverted Grand River Avenue traffic over the detour section to keep the area clear for work crews and equipment.

A Williams 1½-yard clam on a Lorain 820 opened a hole 30 feet deep at the transition point between the cylindrical and twin-box sections, which was used as a tunnel shaft. Dirt was loaded into trucks and hauled to a disposal area 8 miles away. (On their return trip the trucks picked up sand for fill on other Davidson contracts.) While the tunnel portal was being braced and the sides sheeted, a 1¾-yard Page dragline opened up the full area of the twin-box sewer section. The cut was 18 feet wide inside the sheeting, and 160 feet long.

Timber sheeting held back the soil at the tunnel portal and in the area of the transition. However, sections of 22-pound Bethlehem interlock sheet piling, 10 to 23 feet long, served this purpose along the sides of the twin-box, and were kept in place as the outside form for the box section. A 5,000-pound Vulcan drop hammer working in swinging leads on a Lorain 820 did the driving. Davidson's men then poured a concrete mat on the floor as a subbase, and work started on the tunnel and box section at the same time.

Tunneling in Clay

Tunneling for the cylindrical section of the relocated sewer line started at 11 each night. Monkey-hole men went to work in the soft blue clay with hand spades, digging small openings

(Continued on next page)

C. & E. M. Photo

The twin-box section of the relocated sewer can be seen in the foreground, and behind it the portal of the cylindrical section. At street level, to the right, are the Pumpcrete machine and truck mixer.

designed-
built-
right-
for flotation!

NEED a flotation tire you can depend on for free-rolling wheels? You've got it in Goodyear's huge, husky Earth Mover All-Weather giant. Rugged construction gives it outstanding dependability, while its nonclogging tread *adds* to its first-class performance. Result is maximum flotation and *First Choice* standing among profit-wise construction men.

You can't beat the Goodyear team for special-purpose tires

HARD ROCK LUG
Super-tough champ for all types of rock work

SURE-GRIP
Tops in traction on drive wheels of graders and pans

We think you'll like "THE GREATEST STORY EVER TOLD" Every Sunday — ABC Network

All-Weather, Sure-Grip—T.M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TIRES THAN ON ANY OTHER KIND

Tunnel Through Clay For Sewer Relocation

(Continued from preceding page)

in advance of the face. The holes were located at the spring lines for placement of 10 x 6 wall beams on each side of the tunnel.

The face was benched so that two mining crews could work at it—one at the lower half, and one at the top half, which was kept about 6 feet ahead of the lower. The pulling force for their clay knives was provided by two Ingersoll-Rand air tuggers powered by a 500-cfm Blue Brute compressor up at ground surface. The air was fed through a 2-inch steel pipe to ¾-inch manifold tap-offs near the face.

As the chunks of clay were sliced off the face in rapid succession, they were passed to a "bucket-line" of muckers and loaded into mud tubs. As each 2½-yard tub was pushed toward the portal on a 24-inch-gage mine-car track, an empty was brought from the switch. The loaded tub was raised by crane at the portal and dumped to waiting trucks.

As the upper half of the tunnel face was cut away, 6-inch channel ribs were placed 18 inches to 4 feet apart, according to soil conditions, across the roof and supported on the wall beams. Timber beam posts, 8 x 8 inches x 4 feet, were set vertically under the wall beams, and hardwood lagging was placed behind the ribs and wedged tight against the clay.

The muckers moved ahead 12 feet each shift. Now and then when they wanted to turn on the steam, they chewed out a 12-foot section in 5 to 6 hours.

The Concrete Setup

The second shift came in at 9 a. m., after line and grade had been set in the new section by the engineers. The concrete crew placed interior form rings every 3 feet on a piece of 3 x 8-inch lagging set on 6 x 16 x 30-inch precast-concrete chairs spaced at 3-foot intervals. The rest of the lagging was placed behind the rings and held in place by bracing blocks and bulkhead. The edges of the lagging were beveled to form a smooth continuous concrete surface.

A Rex single-action Pumpcrete machine at street level fed concrete into the 12-foot ID tunnel which has a minimum wall thickness of 1 foot 4 inches. A 6-inch line led down the shaft, into the tunnel, and up a trombone section for pours on both sides of the key. Concrete was fed alternately to each side of the forms by swinging the trombone section of the Pumpcrete line across the key. The concrete was internally vibrated, and at intervals an air spade with a foot on it was used for external vibration. The blocks holding the lagging were knocked out as the concrete rose in the forms and metal key plates were put in place as the pour came to the top of the form. The two sets of forms which were used were stripped 48 hours after each pour.

A typical one-yard concrete batch contained 1,319 pounds of sand, 1,818 pounds of stone, 5.9 bags of cement, and 28 gallons of water. Four per cent air was entrained, using a Vinsol resin air-entraining agent. Two 4½-yard Rex mixers on Diamond T 6 x 6 trucks kept the Pumpcrete machine supplied from a Butler batch plant 600 to 700 feet from the tunnel. The plant had a 220-barrel cement bin with an electric weigher and a 50-ton two-compartment aggregate bin with a manual weigher. Stockpiled aggregates—200 tons of sand and 300 tons of stone—were handled by a Northwest No. 2 crane with a ¾-yard clamshell bucket.

Sand was supplied by Lyle J. Walker Sand & Gravel from pits at New Hud-

(Concluded on next page)

C. & E. M. Photos

A knife man slaps his tool against the clay face of the tunnel (above) and guides it while a line from an I-R air tugger supplies pulling power. The chunks of clay sliced from the face travel back in a mud tub (right) to be raised by crane to trucks waiting at street level.

ACROW SHORES

And How They Helped Lower Our Costs

When we switched to ACROW Adjustable Steel Shores, our shoring costs went down. Here's why—we got rid of the expensive jobs of cutting, wedging, and nailing old-type wood shores. Another thing, with ACROW steel shores there's 100% salvage. The high cost of reprocessing wood shores to size is eliminated. ACROW Shores can be used on any type of job because they're adjustable—and ACROW'S all-steel construction lasts indefinitely.

Direct labor costs went down, too, because ACROWS are one-man shores—one man erects an ACROW Shore—it took two or more men to put up a wood shore.

1, 2, 3 and They're Up
Seconds Instead of Minutes

One man can easily erect an ACROW Shore accurately, in less time . . . by following these three simple steps:

1. Lift inner tube to approximate height required . . .
2. Insert steel pin in nearest hole . . .
3. Turn Collar Handle for final adjustment to exact height required.

With this speed and ease of erection, it's easy to see why more than 1,000,000 ACROW Shores are now in use—all over the world.

ACROW INC.

UNITED STATES OFFICES

Chicago, Michigan 2-1010 · Boston, DEvonshire 8-7174 · Atlanta, Emerson 3716 · Dallas, Riverside 6051 · Los Angeles, Lomita 2889
New York, LExington 2-7595 · Philadelphia, LOcust 7-5553 · Houston, Underwood 8514 · Birmingham, 7-5151 · San Francisco, ATwater 2-1442

ASSOCIATE COMPANIES

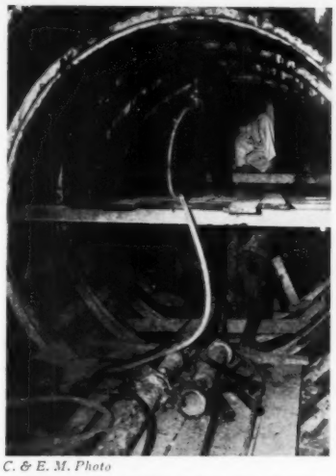
Acrow (Engineers) Ltd. • London • Ambassador 3456
Acrow (Canada) Ltd. • Montreal • VEndome 2488
Acrow Engineers (Pty.) Ltd. • Johannesburg • 22-7245
Acrow (Pty.) Ltd. • Sydney • UX 6473
Acrow Venezuela S.A. • Caracas • 85467
Acrow Brazil S.A. • Rio de Janeiro • 28-1053
Acrow Uruguay S. A. • Montevideo • Galicia 957
Acrow Argentina S.A. • Buenos Aires • 32-1175
Acrow Peru S.A. (Ingenieros) • Lima • 40076

son, Mich., 40 miles away. Inland Lime & Stone Co. delivered the stone, and Peerless Cement Co. the cement. Water was taken from the city mains.

Twin-Box Section

Work on the twin-box section moved along in the open while the tunneling operations were going on. Inside dimensions of each box are 7 feet 3 inches x 7 feet 6 inches. The boxes have a 1-foot common wall, 1-foot-thick outside walls, a 1-foot 3-inch floor, and a 1-foot 2-inch roof. The twin-box section is designed with a guide of reinforcing steel, two layers of transverse steel, and two layers of longitudinal steel, ranging in size from ¾ inch round to 1⅛ inch square. The 83,570 pounds of reinforcing were supplied by Capitol Steel of Lansing, Mich.

Forms were made up of 1 x 8-inch yellow pine with 2 x 6-inch studs and double 2 x 6-inch wales, and were spaced and secured by Universal snap-tie clamps. The invert pour was made with a circular shape of 11-foot radius, resulting in wall joints 8 inches above the floor line at the center of each box. Then the walls and roof were poured, using a bottom-dump bucket lowered into the hole by a Lorain Model 78 crane.



C. & E. M. Photo

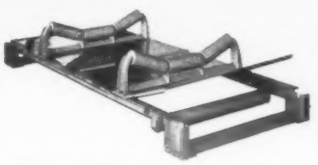
Concrete for lining enters the tunnel by the Pumpcrete line at center and mounts a trombone section into the forms at top.

Personnel

L. A. Davidson had about 12 men on each of the two shifts. Contractor crews were under the direction of Ken Davidson, Project Manager, and George Coon, General Superintendent. Leo R. Crane was Project Engineer representing the Wayne County Road Commission.

Marion Opens Warehouse

Marion Power Shovel Co., Marion, Ohio, has opened a new parts warehouse at 1017 N. 22nd Ave., Phoenix, Ariz., to serve Arizona, Utah, Nevada, and western New Mexico. Hal A. Fisher is Manager, and Ernest J. Riggs, Jr., Marion District Manager, will also maintain offices there.



The Transall sectional conveyor features simple design, low conveyor height, and interchangeable parts.

Sectional Conveyor Allows Fast Shifting

An improved line of low-head sectional belt conveyors is manufactured by Transall Inc., 109 N. 11th St., Birmingham 4, Ala. Used where progressive movement at the loading point requires rapid shifting and extending, they come with head section, tail section, and any number of intermediate sections. Sections may be mounted directly on firm bottom, fixed supports, or skids for portable use. Hinges at the mounting point allow the conveyor to conform to the terrain.

The head section consists of a cantilevered unloading boom, tandem drive, and skid-mounted power unit. The tail section is also skid-mounted, and has a telescopic section to maintain tension.

Chair supports are standard on intermediate sections, except where long-distance installations require anchored foundations. Underslung construction provides low height and simplifies loading by cars, feeders, etc. The sections are easy to assemble, Transall says, and they nest compactly.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 733.

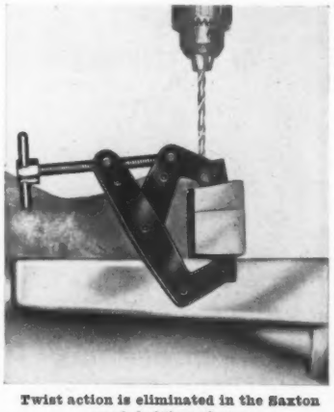
New Work Clamp

A new work-holding clamp has been introduced by Centinela Industrial Supply Co., 11930 Inglewood Ave., Hawthorne, Calif. The Saxton clamp is case-hardened and combines a standard drop-forged C-clamp and a toolmaker's parallel clamp.

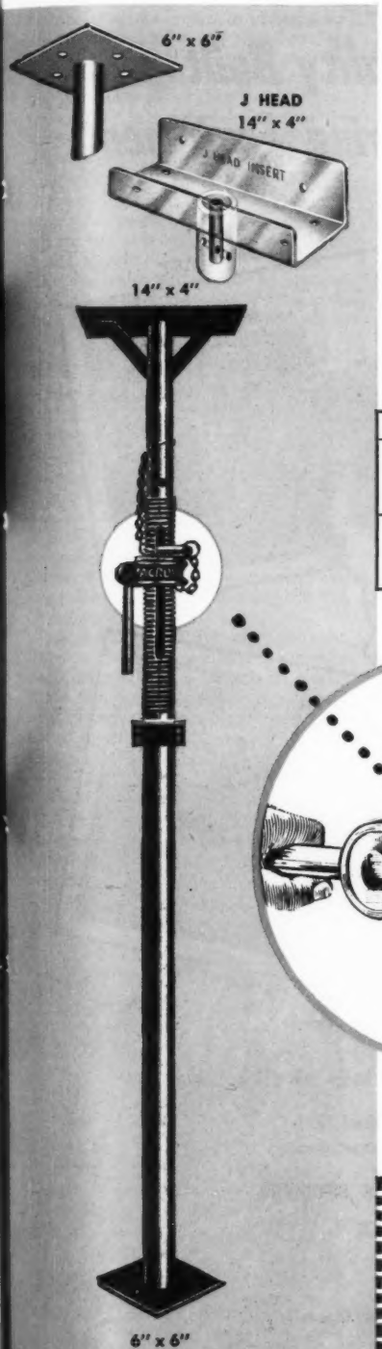
Twisting action is said to be eliminated by the use of a torque-converting ball-bearing trunnion. The trunnion also absorbs vibration, giving a firm, steady grip throughout milling, routing, and shaping operations. There is no unsupported screw or loose pad to "walk" off the center when pressure is applied against the anvil. The horizontal position of the screw at all openings is designed to give freedom of motion and operation.

In actual operation, the Saxton clamp spins open or closed without effort, the company says. It has three different gripping faces to accommodate all types of holding jobs. The company points out that a single clamp is suited for rough welding, general assembly, fast production, or delicate tool and die work. The new unit is available in 1½, 3, 6, 9, and 12-inch sizes.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 798.



Twist action is eliminated in the Saxton work-holding clamp.



Get the Facts on Acrow Shores

ACROW

ADJUSTABLE STEEL SHORES

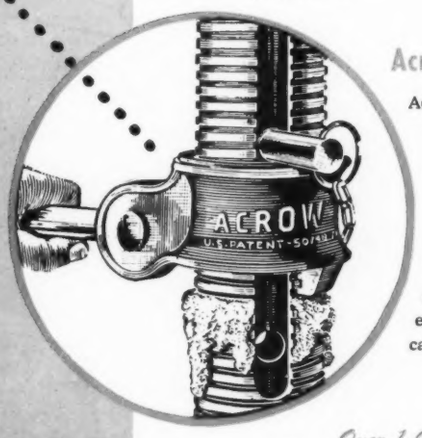
ACROW Shores are engineered and built, from base to head, for the safest, most secure support on the job. The completely positive, simple action leaves no chance for slippage.

GENERAL SPECIFICATIONS

Shore Sizes, Dimensions, Weights, and Capacities							
Size No.	Height		Weight in lbs.	Failing Load		Recommended Safe Working Load	
	Fully Closed	Fully Extended		Fully Closed	Fully Extended	Fully Closed	Fully Extended
1	5 ft. 7 in.	9 ft. 10 in.	46	10.96 tons	8.97 tons	8210 lbs.	6720 lbs.
2	6 ft. 7 in.	10 ft. 10 in.	49	10.50 tons	7.90 tons	7840 lbs.	5975 lbs.
3	8 ft. 2½ in.	12 ft. 5½ in.	56	10.15 tons	7.55 tons	7490 lbs.	5600 lbs.
4	11 ft. 0 in.	15 ft. 0 in.	69	7.27 tons	2.89 tons	5225 lbs.	2050 lbs.

Head Types: Standard Shore 6" x 6" | Beam Shore 14" x 4" | J Head 14" x 4"

Head Fittings: Stirrup-Head and Scaffold-Head various dimensions to specifications.



Acrow Shores are Self-Cleaning

ACROW Shores are always ready for instant use. A unique spur-tooth extension of the collar nut extends over a segment of the threaded tube. With a turn of the collar handle, encrusted concrete, dirt, and grit are easily removed from the threaded tube. Simplicity in design—a minimum of working parts—make ACROW Shores easier to use, more economical, and they can be compactly telescoped for space-saving transport or storage.

Over 1,000,000 Acrow Shores in Use!

The World's Largest Selling Shore

ACROW, INC. Dept. CE-4, 510 North Dearborn St., Chicago 10, Ill.

Gentlemen: Please send me the following free bulletins (Please Check)

☐ ACROW SHORES ☐ COLUMN CLAMPS ☐ TRENCH JACKS

Name.....

Company.....

Address.....

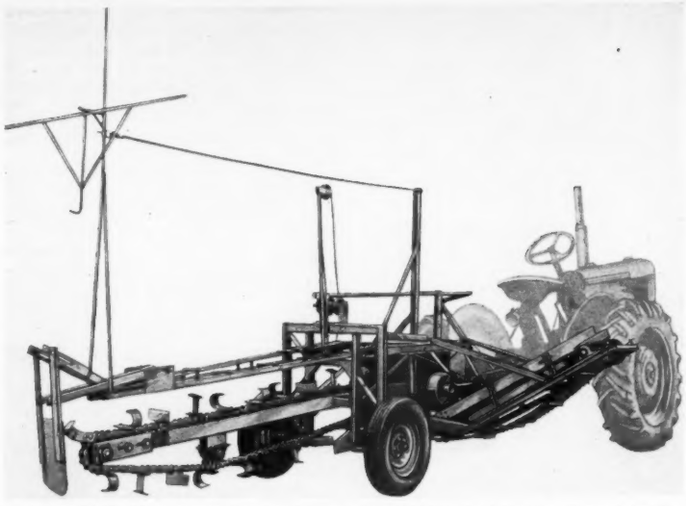
City..... Zone..... State.....

Ditch-Digging Unit Attaches to Tractor

A ditch-digging machine that will work with any farm-type tractor has been developed by Vermeer Mfg. Co., Pella, Iowa. It will dig a 10 to 14-inch ditch, 6 feet deep, at a rate up to 3 feet per minute, depending on soil conditions. The Pow-R-Ditcher is trailer-mounted and uses direct drive from the tractor power takeoff. It is said to be simple to install by hooking onto the drawbar and power takeoff.

The ditcher can be used for laying pipe, gas, water, and sewage lines, and for digging foundation trenches. It has a series of long-wearing cutting blades, mounted on heavy roller chain, which are easily removed for sharpening or replacement. All dirt is conveyed to one side of the ditch.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 752.



The Pow-R-Ditcher is trailer-mounted and uses direct drive from the power takeoff. It will work any farm-type tractor.

Hard-Facing Rods

A new line of hard-facing electrodes and acetylene welding rods is announced by Metal & Thermit Corp., 100 E. 42nd St., New York 17, N. Y. There are rods for extreme abrasion, medium and heavy impact, severe shock, high red hardness, and extreme heat and corrosion resistance. In addition, there is a new Murex tungsten-carbide rod which provides a slag-free deposit which allows all residue to be readily cleaned away by wire brushing.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 736.

Construction's Compliance With Fair Labor Standards

On completion of the first full year of operations under the Fair Labor Standards Amendments that went into effect January 25, 1950, the United States Labor Department issued compliance statistics for the various industries.

By and large, construction's record is fair. According to the 1951 annual report of the Wage and Hour and Public Contracts Divisions, only 14 per cent of the contracting firms investigated failed, during the year, to observe the minimum wage of 75 cents an hour; the percentage violating the Fair Labor Act's child-labor provisions was only 2. However, in the matter of overtime-pay violations, the construction industry must face up to a 61 per cent failure to pay at least time and one-half the employee's regular rate of pay for all hours worked in excess of 40 in the work week. "Regular rate", under the amendments, includes all remuneration for employment except certain specified payments.

As a result of the Divisions' activities, a total of $331,229 in back wages was paid to 5,092 employees. Not a vast sum, when you come to think of it. However, it does not include sums employees collected in court after suit under the provisions of the Act.

Sprockets and Roller Chains

A 72-page catalog on sprockets and roller chains is available from Cullman Wheel Co., 1344 Altgeld St., Chicago 14, Ill. It illustrates and gives specifications for cable, roller, and double-pitch chains; sprockets; and flexible couplings. An engineering section discusses methods of selection, design, lubrication, and chain ratings. Tables give roller-chain sprocket diameters for a given pitch and number of teeth.

This literature may be obtained from the company by requesting Catalog No. 51, or by using the Request Card at page 16. Circle No. 800.

Cooper-Built

STEEL or ALUMINUM BUILDINGS for all purposes

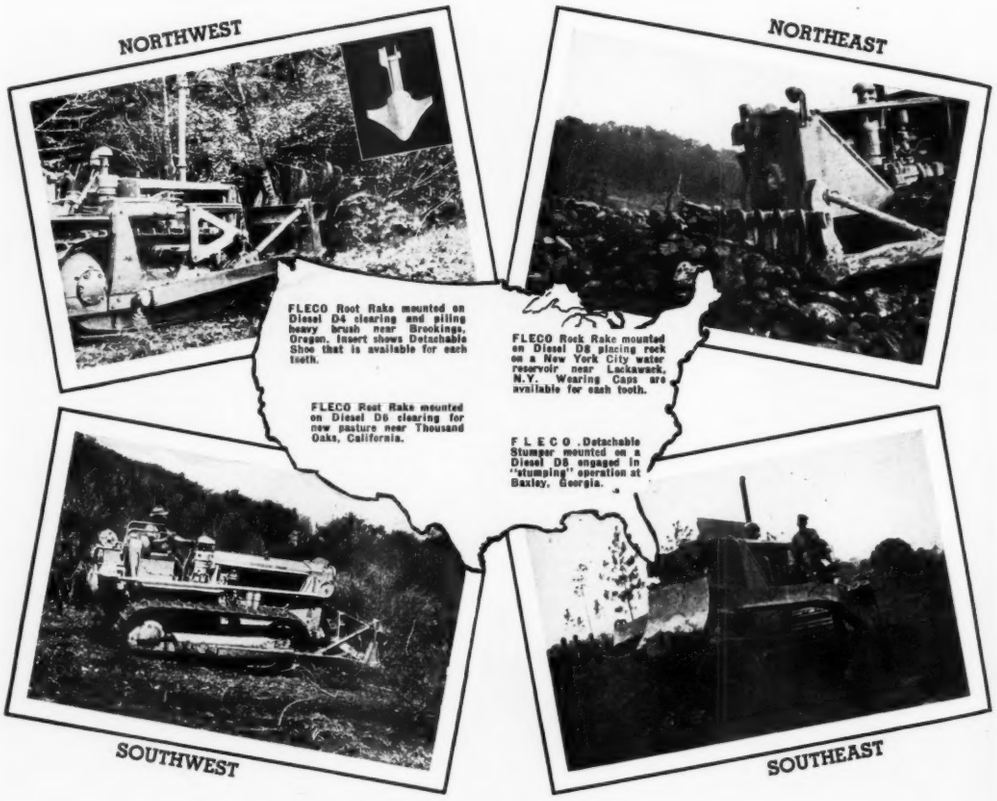
Field Offices • Storage Sheds
Pump Houses • Machine Shops • etc.

QUICK DELIVERY
Write for Catalog
JOHN COOPER CO.
293 2nd Street Hackensack, N. J.

FLECO

Reg. U. S. Pat. Off.

Quality Built Land Clearing Equipment


NORTHWEST
NORTHEAST
FLECO Root Rake mounted on Diesel D4 clearing and piling heavy brush near Brookings, Oregon. Insert shows Detachable Shoe that is available for each tooth.
FLECO Rock Rake mounted on Diesel D8 placing rock on a New York City water reservoir near Lackawack, N.Y. Wearing Caps are available for each tooth.
FLECO Root Rake mounted on Diesel D6 clearing for new pasture near Thousand Oaks, California.
FLECO Detachable Stumper mounted on a Diesel D8 engaged in "stumping" operation at Baxley, Georgia.
SOUTHWEST
SOUTHEAST

For use with all track-type tractors for all kinds of clearing.

Available for all makes and models of modified bull-dozer arrangements, either cable or hydraulic operated.

ROOT RAKE	DETACHABLE STUMPER
ROCK RAKE	TREE CUTTER
BRUSH RAKE	TREEDOZER

Distributed by Fleco-"Caterpillar" dealers all over the world.

FLECO CORPORATION

Jacksonville 3, Florida, U. S. A.

New Rubber Powder For Road Surfacing

A synthetic-rubber powder for highway surfacing has been developed by Goodyear Tire & Rubber Co., Akron 16, Ohio, in cooperation with Berry Asphalt Co., of Magnolia, Ark., a producer of asphalt road-building materials. A number of test installations in the middle west are being watched carefully by research men of both companies, as well as by highway engineers.

Dr. R. P. Dinsmore, Goodyear Vice President in charge of research and development, describes the material as a finely divided free-flowing powder made by co-precipitation of a butadiene-styrene latex and a mineral filler. Laboratory and pilot-plant specimens, he says, point to many advantages: as a free-flowing powder, the new rubber is easy to handle, and it mixes freely with the asphalt, showing no tendency to resist rapid dispersion. It can be made available in two forms, he said: as the co-precipitate with some of the fine mineral aggregate normally used in bituminous concrete, or as a pre-mix with powdered asphalt. In either state, the rubber is said to be equally effective.

Tests made by an independent testing laboratory show that from 1.5 to 2 per cent of this rubber added to the weight of the asphalt is as effective as a 5 per cent conventional rubber-asphalt mixture in resisting the stripping action of water and frost. This feature is credited to the fine particle size of the rubber and its ease of dispersion in the asphalt.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 846.

New Battery-Powered Flashing-Light Signal

A self-contained and portable flashing-light warning signal which can be mounted on signposts, barricades, or trees is manufactured by Light Products, Inc., 407 Commercial Center, Beverly Hills, Calif. Furnished with an 8⅜-inch red or yellow lens, the Neo-Flasher 5-100 will run continuously for about 150 days and nights on 3 small 6-volt batteries.

The company points out that the 13½-pound unit requires no costly trenching, wiring, or battery box. It is visible for approximately one mile and is said to meet all standard traffic control requirements for color and visibility ratings. The aluminum cast unit has an 8-inch waterproof hood held down with Zeuss fasteners. It uses a gas-vapor tube designed not to burn out and a noncorrosive Alzac reflector.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 783.

No trenching, wiring, or battery box is needed to install the self-contained Neo-Flasher. It will run 150 days and nights on 3 small 6-volt batteries.

Offers Three Fellowships For Studies of Concrete

The National Ready Mixed Concrete Association and the National Sand and Gravel Association, Washington, D. C., are sponsoring three fellowships at the University of Maryland. The two sponsored by the National Ready Mixed Concrete Association are designated the Stephen Stepanian Fellowship and the C. Dolly Gray Fellowship. The one sponsored by the National Sand and Gravel Association is designated the Stanton Walker Fellowship. The stipend in each case is $1,500 a year, paid in ten monthly installments. Fees are paid and required textbooks purchased by the associations. The Fellow enters upon his duties about September 1 or February 1.

In the case of all three fellowships, appointees will register in the Graduate School of the University of Maryland. Work will be scheduled so that the Fellow's time will be divided about equally between study of selected and approved courses and research on appropriate problems related to the ready-mixed-concrete and the sand-and-gravel industries. The faculty supervisor will be the Dean of the College of Engineering of the University.

Completion of the work in all cases leads to the degree of Master of Science. Fellowships are open to qualified graduates in engineering from accredited colleges and universities. To obtain an application form, write to the Dean of the Graduate School, University of Maryland, College Park, Md.

Bulletin on Paving Forms

A 12-page bulletin on heavy-duty self-aligning forms for extra-thick pavements is offered by Blaw-Knox Division, Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 22, Pa. It includes illustrations and diagrams on form setting, describes construction features, lists complete specifications on forms from 8 x 8 inches to 12 x 12 inches, and suggests purchasing specifications.

This literature may be obtained from the company by requesting Bulletin 2370, or by using the Request Card at page 16. Circle No. 845.

GOING'S ROCKY

...but it just keeps 'dozin' along!

You can see what conditions were like on this road-building job near Henrieville, Utah. The altitude's 7,000 feet. In 2½ miles, about 160,000 cu. yds. 85% rock had to be moved. To move it, Whiting & Haymond relied heavily on "Caterpillar" units—among them, this D8 Tractor with No. 8U Bulldozer. Supt. A. H. Cranmer said: "'Cat' Diesel Tractors are tops for work of this nature. With the amount of rock we had here, they stood up to it all day long and it never hurt them. Our 'Caterpillar' Dealer took care of us in grand shape."

Mr. Cranmer makes two good points. First, "Caterpillar" units stand up under tough going. Second, you get good service from your "Caterpillar" Dealer. However, it's just common sense not to wait until the last minute to call on him. Have him rebuild parts *before* wear damages them beyond repair. And see that your rigs get proper maintenance attention on the job. That takes only a few minutes a day, but it's an important factor in adding many *extra* working hours to the life of your sturdy "Caterpillar" equipment.

CATERPILLAR
REG. U. S. PAT. OFF.

DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

CATERPILLAR TRACTOR CO. • Peoria, Illinois

The Transmix mixes concrete while it transports, and dumps hydraulically. The drum has a 10-cubic-foot capacity.

Tractor-Mounted Mixer Transports and Dumps

A concrete mixer which attaches to the rear of a Ford or Ferguson tractor is manufactured by Universal Pulleys Co., P. O. Box 1337, Wichita, Kans. The 10-cubic-foot drum rolls on two wheels in a hydraulically operated rack. A standard 6.00 x 16 rubber tire on the closed end of the drum is turned by a power-takeoff extension. The hydraulic mechanism can raise the barrel to an almost vertical position, allowing easy discharge of the mixture.

The Transmix is used as either a transporting or a stationary mixer and the batch can be dumped when the tractor is moving or standing. The transporting-mixing feature ordinarily eliminates the need for laying special runways or using wheelbarrows and carts.

The company claims that when the machine is traveling less than 75 feet, it can mix, carry, and dump a batch (one bag of cement at 5 to 1 ratio) in 3 minutes. As a stationary unit, it can mix and dump 40 batches per hour. Three wheelbarrows are usually required when operating at full speed. It can also be used to transport dirt, water, or other materials.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 728.

Line of Respirators

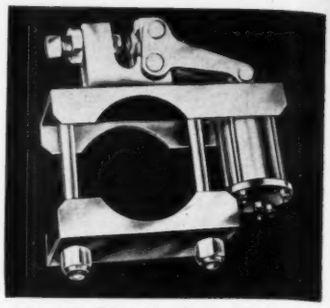
New respirators are now being offered by The DeVilbiss Co. of Toledo, Ohio. There is a filter model and a cartridge model, as well as two respirators approved by the Bureau of Mines.

The MSC single-cartridge and MSE double-cartridge types protect against low concentrations of light organic fumes, vapors, and gases encountered in spray painting, degreasing, cementing, and similar operations. They are usable in the presence of benzene, zylene, toluene, gasoline, naphtha, acetone, turpentine, and other fumes of this type.

The MSF filter type is used for protection against light concentrations of nuisance dusts produced in grinding operations, cement mills, woodworking plants, and for other exposures not involving pneumoconiosis, silicosis, or asbestosis-producing dust. Where protection is needed against poisonous and disease-producing dusts as well as against a combination of all dusts—toxic, nuisance, and pneumoconiosis-producing—the MSD Bureau-approved filter respirator is recommended by the company.

Special features in the MSE approved model are the double absorbent cartridges, which remove fume by active chemical purification. Fiber prefilters are provided which increase the life of the replaceable cartridges. The face piece is designed for comfort, protection, and vision. The protective element in the two filter models is specially treated felt. In the Bureau-of-Mines-approved filter model, the chemically treated felt will trap particles as small as 24 millionths of an inch, yet provide easy breathing and maintain full efficiency for long periods.

Further information may be obtained from the company. Or use the Request Card at page 16. Circle No. 844.

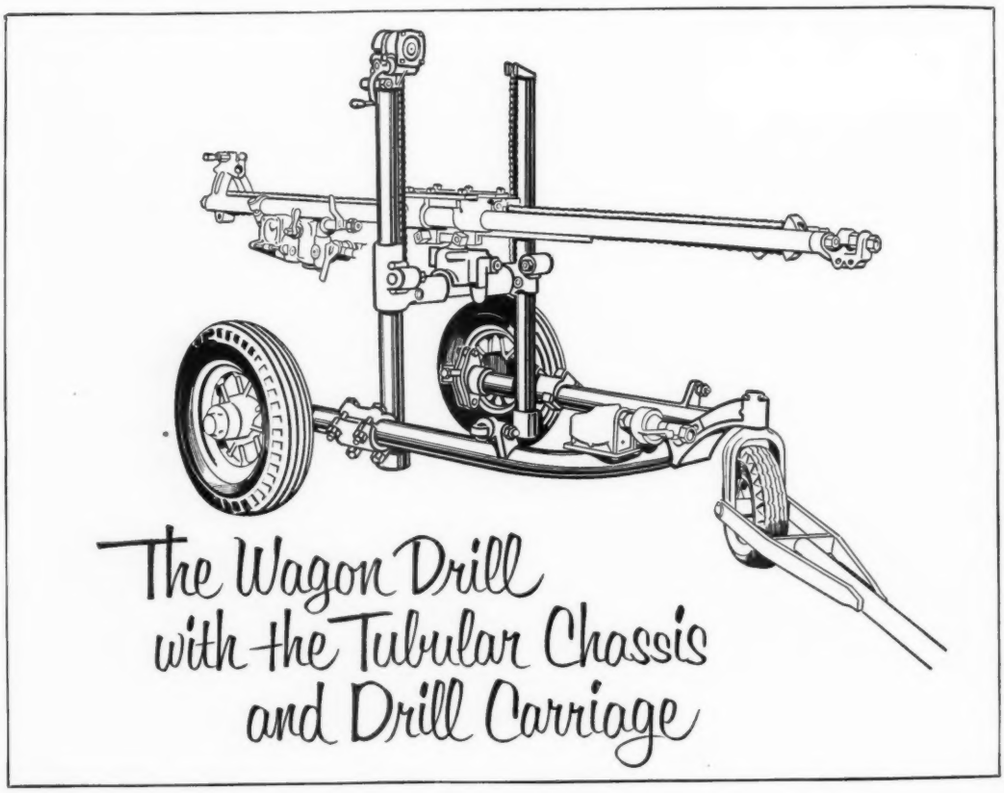


The new Viber air clamp speeds the installation of external vibrators and is especially adaptable where only a short period of vibration is necessary.

Air-Operated Clamp

An air-operated clamp for installing external vibrators is announced by Viber Co., 726 S. Flower St., Burbank, Calif. Air is first applied to jaws which secure the clamp to any exposed steel member. A few seconds later the vibrator is ready to move bulk material with the vibration period necessary.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 794.



G-300 Wagon Drill

Write for further information.

The rugged tubular chassis and drill carriage of the G-300 WAGON DRILL provides rigidity and strength without unnecessary weight.

The tubular "H" structure that supports the drill carriage gives greater stability than the conventional design and minimizes vibration. The all-around sturdy construction of the G-300 maintains correct alignment at all times, insuring maximum drilling efficiency with minimum upkeep.

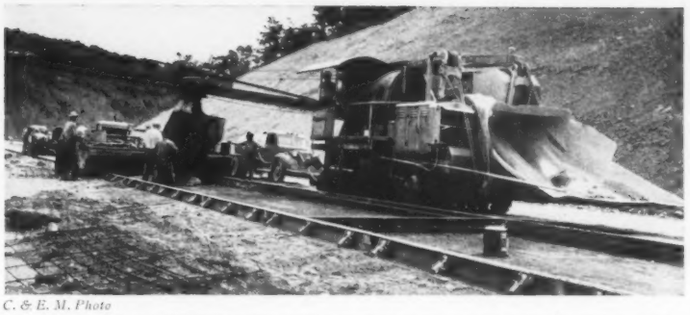
G-300 Wagon Drill

- is designed to take full advantage of the high drilling speed and strong rotation of the CP 4-inch 70-N Drifter.
- has controls conveniently centralized.
- is equipped with a specially designed feed motor and cone-gear drive for greater load-carrying capacity.
- has a heavy-duty centralizer.
- adaptable for all types of wagon drill work. Wheels can be turned at right angles to facilitate line drilling or drilling close to a ledge or wall.

CHICAGO PNEUMATIC TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.
PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

Concrete Pavement Has Cinder Subgrade

Another 3¼ Miles of Dual Highway Improves State Route; Box Culvert, Bridge, RR Grade Separations Included



C. & E. M. Photo

A Koehring 34-E Twinbatch paver with a 35-foot boom drops a batch (mixed for 1¼ minutes) between Blaw-Knox forms on Pennsylvania State Route 29. A B-K spreader follows to strike the concrete off 2 inches below the top of the form.

•AMONG the many highway improvements completed last season in Pennsylvania was a 3¼-mile stretch on State Route 29 in Schuylkill County. Running nearly north and south, the betterment continues a dual highway north from Ginther to McAdoo, which is 4 miles from Hazelton in the heart of the anthracite-coal-mining region. The new four-lane divided concrete road replaces an 18-foot concrete pavement nearly 25 years old. Grades and alignment were considerably improved in the reconstruction.

Work on the project got under way in September, 1950, after the Pennsylvania Department of Highways awarded a contract to F. D. Kessler, Inc., of Northumberland, Pa., on its low bid of $2,212,157. Grading was heavy, involving more than 500,000 cubic yards of excavation, but by working through the winter the contractor was able to begin paving last August. The roadway itself was completed by the end of the year, but because of the steel shortage the final work on some of the larger structures was delayed until this season.

In addition to the grading, drainage, and paving items, the contract included several major structures: a 6 x 6-foot reinforced-concrete box culvert 254 feet long under a 60-foot fill; a reinforced-concrete arch bridge, 164 feet long, with a 14-foot span over a tributary of Lofty Creek; and three railroad grade separations. One of the latter carries the highway over the Central Railroad of Pennsylvania on a three-span (32-32-36-foot) reinforced-concrete bridge having a 64-foot clear roadway. The highway goes under another of the structures at McAdoo, a two-span (each 82 feet 6 inches) continuous plate-girder bridge carrying double tracks of the Lehigh Valley Railroad. The third structure, near Ginther, is a one-span (90 feet 6 inches) plate-girder bridge carrying a single track of the Lehigh Valley railroad over the highway. The east abutment of the existing underpass was used for this new structure, but a new west abutment was required because of the increased span length and some realignment in the track work. Construction of all bridges was subbed out to the Kingston Contracting Co. of Lattimer Mines, Pa.

Heavy Grading

In the effort to improve horizontal and vertical profiles in this hilly country, heavy grading naturally was encountered. Despite the better alignment, there is still an 8 per cent grade for 2,000 feet; the existing road was even steeper in places. Through traffic was detoured during most of the construction.

The new roadway is 64 to 68 feet in width, consisting of four 11-foot traffic lanes separated down the middle by a 4-foot-wide raised concrete divisor, and flanked by either 8 or 10-foot shoulders. In fills the shoulders are 10 feet wide and have a pitch of ¾ inch to the foot; in cuts the shoulders are 8 feet wide, and pitch at the rate of 1½ inches to the foot. Sideslopes in both cut and fill sections are 1½ to 1; in rock cuts the backslopes are ¼ to 1.

The concrete pavement has a 9-inch uniform depth, and is reinforced with wire mesh placed 2 inches below the surface. Paving was done in 11-foot lanes, and each half of the dual pavement has a total pitch of 3½ inches away from the inner edge. Under the pavement is a special subgrade, 6 inches in depth, that is carried out through the shoulders to the slope lines. This typical section is the same as that portion of State Route 29 that connects on the south end of the improvement, and continues 4 miles to Tamaqua.

Dirt and Rock Moving

Mixed in with the dirt was rock—some red shale and mostly conglomerate granite. It was a waste job, with about 90,000 yards of material being spoiled, and borrow required only for the special subgrade. Blast holes were drilled with 6 Ingersoll-Rand and 4 Schramm wagon drills, with the air supplied by 8 compressors—two I-R's at 600 cfm, one I-R at 500 cfm, one I-R at 315 cfm, two Schramms at 315 cfm, and a Joy-Sullivan and Worthington each at 105 cfm. Atlas, DuPont, and Trojan dynamite was used to charge the holes.

Excavators included 5 shovels—a 2½-yard Koehring, a 2½-yard Osgood,

(Continued on next page)

50-TON ON AIRPORT

FOUR-UNIT ON DAM

SIX-UNIT ON HIGHWAY

Southwest Compaction Rollers

SET NEW RECORDS for compacting heavier lifts with fewer passes. On the big jobs where maximum compaction is required the Southwest gets the work done quickly and efficiently.

Weight-box units of Southwest Compaction Rollers oscillate up and down independently and provide a constant, uniform compacting load on each tire regardless of ground contours. There is no bridging, no shifting of load from tire to tire.

Sectionalized tubular yoke allows the use of any combination from 3 to 6 weight-box units. Sizes and capacities range from 10 to 100 tons, suitable for light, medium or heavy duty compacting of earth.

Write for information

CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

Alhambra, California

HAULING SCOOPS · BULLDOZERS · LOADERS · BOTTOM DUMP WAGONS · RIPPERS · TAMPERS · SCRAPERS · TREE DOZERS

Concrete Pavement Has Cinder Subgrade

(Continued from preceding page)

a 2-yard Osgood, a 1½-yard Lorain, and a 1½-yard Northwest. For drainage and structures the contractor employed a Koehring crane, a Bay City crane, a Lorain backhoe, and a Link-Belt Speeder backhoe. The latter unit was also used with a 35-foot boom and a 1½-ton ball weight to break up some shale deposits into workable size.

Material was moved with a great variety of equipment that included 3 Tournapulls with Carryalls; 6 Tournarockers; 9 end-dump Euclids; and 4 Caterpillar DW10's with Athey wagons. Of the 9 tractor-dozers on the job, 5 were Caterpillar D8's, 2 were Allis-Chalmers (HD-19 and HD-7), 1 was an International TD-18, and 1 was an Oliver. Motor graders included a Caterpillar No. 12 and two Allis-Chalmers—an AD-3 and an AD-2; the latter was used mostly on shoulder work. Compaction was achieved with the heavy equipment and three 10-ton 3-wheel rollers—two Buffalo-Springfields and one Hercules.

Special Subgrade

Material for the 6-inch-thick special subgrade consisted of red cinders that were obtained from an abandoned colliery of the Lehigh Valley Coal Co. that was conveniently located about 5 miles west of the center of the job. One of the smaller shovels bit into the huge stockpile of cinders, and the hauling was done with a fleet of nine trucks averaging 8 yards a load. Dozers and graders spread and shaped the material in a single course which was compacted by the smooth-wheel rollers.

Forms were then set and the pins driven by an air hammer powered by a truck-mounted Schramm 105-cfm compressor. A total of 7,500 linear feet of Blaw-Knox and Heltzel forms was on hand. Excess material between the forms was removed by a Buckeye subgrader which was followed by a Buffalo-Springfield 6-ton 3-wheel roller. The grade was checked with a scratch board, and any further compaction was done with a small hand roller. Since the paver worked outside the forms, joints were laid out in advance, forms were then oiled, and the subgrade was wet down.

Bethlehem Steel Co. of Bethlehem, Pa., supplied the reinforcing material and the joints. Transverse construction joints are spaced on 61-foot 6-inch centers, and are made up of Bethlehem Type B1 load-transfer assemblies. They consist of a ⅛-inch steel plate that comes up to within ½ inch of the surface of the slab, and had an installing cap on top. Through the plate are 1 x 19-inch slip dowel bars on 12-inch centers.

Every tenth construction joint, or 615 feet apart, there is a transverse expansion joint made of Celotex material ¾ inch thick. The top of the joint is ⅜ inch below the surface of the concrete. Adjoining 11-foot lanes are tied together at the longitudinal center-line joint with hook-bolt dowels, ⅝ inch in diameter x 14 inches long; half of the length is in each lane. They are spaced from each construction joint as follows: the first dowel at 1 foot, the next at 2½ feet, and after that on 5-foot centers.

Batch Plant

A concrete batch plant was set up about midway of the job on a siding of the Reading Co. railroad that served the Old Silver Brook Colliery. Portland cement, air-entrained at the mill with Vinsol resin, was supplied by two plants of the Lehigh Portland Cement Co.—one at Fogelsville, Pa., and the other at Ormrod, Pa. It was delivered by rail in bulk shipments and stored in

(Concluded on next page)

C. & E. M. Photo

Two Lorain 77's loading and unloading at the aggregate plant. At left, the rig loads coarse aggregate from the stockpile into a Butler bin. At right, another crane unloads sand and stockpiles it onto a specially boarded floor.

KEEPS EQUIPMENT ON

SIMPLIFIED LUBRICATION

Follow the Texaco Simplified Lubrication Plan and you can handle *all* your major lubrication *with only six Texaco lubricants.* A Texaco Lubrication Engineer will gladly explain its many advantages. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TUNE IN . . . TEXACO STAR THEATER starring MILTON BERLE on television every Tuesday night. See newspaper for time and station.

TEXACO

TEXACO

a Butler 250-barrel cement bin.

Sand also came from the Lycoming Silica Sand Co. of Montoursville, Pa., and was unloaded from gondola cars by a Lorain 77 crane equipped with a 45-foot boom and a 1¼-yard Blaw-Knox clamshell bucket. The crane either charged the Butler 75-ton 3-compartment aggregate bin, or stockpiled the sand on a large board floor that was laid on the ground in order to keep the sand clean from mud or foreign material.

Two sizes of crushed stone for the coarse aggregate were furnished by the General Crushed Stone Co. and trucked in from its White Haven plant, an 18-mile one-way haul. The material was stockpiled, and the other two compartments of the aggregate bin were charged by another Lorain 77 crane, this rig equipped with a 55-foot boom and a Blaw-Knox 1-yard clamshell bucket.

The Mix

The dry weights of a typical 8.73-bag batch of concrete were as follows:

Sand	1,492 lbs.
Stone, 2B	1,308 lbs.
Stone, 3A	1,308 lbs.
Cement	821 lbs.
Water	393 lbs.
Total	5,322 lbs.

A typical batch yielded 36.72 cubic feet of concrete that weighed 144.9 pounds to the cubic foot. It averaged 3.4 per cent air and a 2-inch slump. In paving the 8 per cent grade up the hill, the batch size was cut down to an 8.08-bag mix to lighten the load for the paver.

Gradation requirements for the sand and two sizes of crushed stone were:

Sieve Size	Per Cent Passing		
	3-A Stone	2-B Stone	Sand-Type A
2½-inch	100	.....	.....
2-inch	90–100	.....	.....
1½-inch	35–70	.....	.....
1¼-inch	.....	100	.....
1-inch	0–15	90–100	.....
½-inch	.....	20–50	.....
⅜-inch	.....	.....	100
No. 4	.....	0–10	90–100
No. 20	.....	.....	40–75
No. 50	.....	.....	10–30
No. 100	.....	.....	1–8

C. & E. M. Photo

Adolph Kerewicz, Resident Engineer, and James Montgomery, Superintendent, take time off for the camera.

Paving Operations

A fleet of 9 Ford F8 trucks, holding two batches each and with separate metal containers for the cement, hauled the dry materials from the batch plant to the Koehring 34-E Twinbatch paver equipped with a 35-foot boom. The paver worked outside the forms, and pulled along a 1,000-gallon tank truck that supplied it with water for the mix through a hose line. Two tank trucks were used so that there was always one at the paver while the other was getting refilled. Water was obtained in nearby McAdoo from the Hazelbrook Water Co.

Batches were mixed for 1½ minutes, then deposited on the subgrade in front of a Blaw-Knox spreader that struck the concrete off 2 inches below the top of the form. The reinforcing steel was laid in place, more concrete put on top, and the spreader made another pass to level it off even with the forms. A Master vibrator was carried at the rear of the spreader for vibrating the concrete at the joints and along the sides of the forms.

Behind the spreader came a Blaw-Knox dual-screed finishing machine, and after that the remaining operations were done by hand. Finishers checked the surface with a straightedge, and removed any irregularities with hand floats. Laitance was removed with a burlap drag, and the metal caps were lifted off the joints. Interior joints were edged with a ¼-inch-radius tool, while on the outside edges a ¾-inch-radius tool was used.

The concrete was cured with Sisalkraft paper that was left on for three days. Two-foot-wide strips were placed along each edge, and an 11-foot strip over those. When the forms were removed, the narrower strips were pulled down to cover the sides of the slabs. Dirt was thrown on top of the paper to hold it in place during the curing period. Joints were later poured with J-1 asphalt filler. Average daily production was 1,800 linear feet of 11-foot lane in 10 hours.

Quantities and Personnel

Major items in the 3¼-mile dual-highway paving contract included the following:

Excavation, class I	550,671 cu. yds.
Excavation, class II	13,000 cu. yds.
Special subgrade	97,800 sq. yds.
RC pavement, 9-inch	71,752 sq. yds.
Concrete for structures	6,322 cu. yds.
Reinforcing steel	662,903 lbs.
Structural steel	660 tons
RC pipe, 15 to 48-inch	3,920 lin. ft.
Foundation underdrain, 6-inch	12,620 lin. ft.
White concrete reflecting curb	26,657 lin. ft.

F. D. Kessler, Inc., employed an average force of 120 on the project under the supervision of James M. Montgomery, Superintendent.

Adolph Kerewicz was Resident Engineer on the contract, which was located in the Fifth District, with R. E. Boyer, the District Engineer and M. E. Boogar, District Construction Engineer, both headquartered at Allentown. The Pennsylvania Department of Highways is headed by E. L. Schmidt, Secretary of Highways, with W. A. Warrick, Chief Construction Engineer.

Baughman's Opening Party

A 16,000-square-foot factory building made a fine setting for the party at which Baughman Mfg. Co., Inc., Jerseyville, Ill., recently entertained between 2,500 and 3,000 guests. Baughman, manufacturer of bulk-cement bodies, loaders, conveyors, and allied equipment, was celebrating the opening of its newest and largest factory building, and dancing and music were the order of the evening.

This latest factory addition brings the Baughman plant up to 100,000 square feet of covered manufacturing, assembling, and storing facilities. A 1,900-foot all-weather airstrip complete with hangar for company airplanes adjoins the plant.

THE JOB—KEEPS JOBS AHEAD OF SCHEDULE

. . . that's why Brown Contracting Company prefers TEXACO MARFAK

For the past ten years, Brown Contracting Company, Albuquerque, N. M., has made *Texaco Marfak* its first choice for chassis lubrication Reasons: "*Texaco Marfak* stays in the bearings, gives longer lasting protection against wear and rust even under the toughest conditions, and definitely increases parts life. We have less downtime on our equipment, and our maintenance costs are lower."

For the same reasons, contractors everywhere prefer *Texaco Marfak*. That's why: MORE THAN 400 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD.

For wheel bearing lubrication, use *Texaco Marfak Heavy Duty*. It seals out dirt and moisture, seals itself in. Assures safer braking because it won't leak onto drums. You can count on longer bearing life, lower maintenance costs. No seasonal change required.

Reduce Other Maintenance Costs

In engines — heavy-duty gasoline or Diesel — use *Texaco Ursa Oil X*★★. It's fully detergent and dispersive, keeps engines clean for low maintenance costs and fuel consumption.

In crawler track mechanisms, use *Texaco Track Roll Lubricant*. It seals out dirt and moisture, protects bearings against wear and rust.

Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

Faithfully yours
TEXACO
50
for Fifty Years

Steel sheet piling holds back mud at subgrades during construction of a county-wide system of sanitary trunk sewers. Hendrickson Bros. is the contractor on the project.

Steel Sheet Piling Helps Build Sewers

A county-wide program of sanitary-trunk-sewer construction is being carried out in Nassau County, N. Y., at a cost of several hundred million dollars. The County let a $4,000,000 portion of the contract to Hendrickson Bros., Valley Stream, Long Island, and the accompanying picture shows a section of sewer, extending from Bay Park to the Nassau-Queens county line, on which Hendrickson worked.

At the point shown, the sewer consists of 66-inch-diameter precast conduit which is placed in 8-foot sections at an average depth of 35 feet atop a 7-inch concrete slab. Hendrickson used steel sheet piling on about 10,000 feet of the project, to hold back mud at subgrades. He obtained 1,000 feet of piling from L. B. Foster Co. Pittsburgh, and drove it into the relatively soft subsurface a total of ten times to complete the job.

New Chemical Treats Seal-Coat Aggregate

A chemical treatment for seal-coat aggregate is produced by Andresen Corp., 6500 N. Hamlin Ave., Chicago 45, Ill. Ankorok is said to form a water-repellent coating which causes an affinity between undried aggregate and seal-coating asphalt.

The company claims that this treatment causes each stone particle to stay stuck, thus eliminating dust, waste, and floating, clogged gutters, and tackiness. It is said to improve skid resistance, provide a thicker wearing mat, and extend the seal coat's life.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 787.

Data on Copying Machines

An 8-page booklet on the Copyflex process for making diazotype copies has been prepared by Charles Bruning Co., Inc., 125 North St., Teterboro, N. J. It points out that the Copyflex machine is useful to the engineer for making replicas of original drawings, charts, maps, or specifications.

The booklet describes and diagrams the operation of the process, illustrates different models, and lists materials that are available for various copying needs.

This literature may be obtained from the company by requesting Booklet A-2008, or by using the Request Card at page 16. Circle No. 843.

Largest Belt-Test Machine

The largest laboratory conveyor-belt testing machine in the world recently went into operation. Raybestos-Manhattan, Inc., made it and it is now working at the company's Manhattan Rubber Division laboratory at Passaic, N. J. It tests production-scale belts up to 30 inches wide to include widths in general use, and the same data obtained will be applicable to wider and longer belts.

The machine puts any 30-inch-wide 80-foot length of conveyor belt through its paces up to 200,000-pound tension. It duplicates the actual conveyor equipment arrangement of head, snub, bend, takeup, and tail pulleys, with adjustable angle and elevation of troughing idler pulleys. Automatic recorders trace simultaneously power input, stretch, tension, and speed at any speed up to 2,000 fpm. Where conveyor installations involve greater stress conditions on the belt than heretofore encountered, says the company, the new test machine will relieve both the manufacturer and the purchaser from a substantial measure of trial and error.

Data on Diesel Engines

Design and operation features of the 1, 2, and 3-cylinder Type 4FS diesel engines are described in a 12-page bulletin issued by Nordberg Mfg. Co., Chase and Oklahoma Aves., Milwaukee 1, Wis. The engines are built for continuous duty or standby service, have a 4½-inch bore and 5¼-inch stroke, and are of the 4-cycle, vertical mechanical injection type. The units range from 10 to 45 hp within an operating-speed range of 1,200 to 1,800 rpm, and are offered as complete, self-contained, ready-to-operate units with generator, pump, or power takeoff for direct connection or belt drive.

The bulletin gives kilowatt ratings and pumping capacities. It includes illustrations, specifications, typical applications, and a cross-section view.

This literature may be obtained from the company by requesting Bulletin 194, or by using the Request Card which is bound in at page 16. Circle No. 842.

LARGE O.D. STEEL PIPE

NEW WELDED AND SEAMLESS
Available from stock

14" to 30" OD
Walls 3/16" to 1"
and Heavier

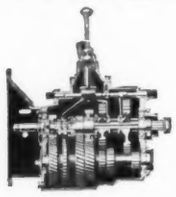
Also ⅛" to 12" in standard, extra strong and double strong—Prime and Structural grades—any quantity.

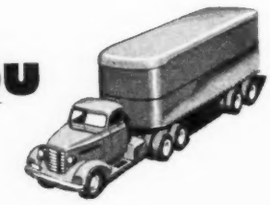
We are specialists in solving the pipe problems encountered in the construction field—ask us to help—no obligation.

WRITE—WIRE—PHONE

MID-CONTINENT TUBE SERVICE 808 East 74th Street, Chicago 19, Illinois HUdson 3-1307

Model 5-A-620—one of 108 available standard Fuller Heavy-Duty Transmissions and Auxiliaries.





with enough gears, you can move the world

Iron ore from the Mesabi range . . . copper from the mines of Arizona . . . salt from the flats of Utah . . . coal from the pits of Pennsylvania . . . fruit and vegetables from California and Florida . . . big logs from the nation's forests . . . freight from coast to coast . . . the world's greatest transportation system constantly passes before our eyes . . . the world's most efficient trucks move over the marvels of economic history . . . the highways of America.

Leading designers, manufacturers, and operators of heavy duty trucks have worked closely with the Fuller Manufacturing Company from the very beginning of this transportation miracle—helping perfect and refine more efficient, longer lived and heavy capacity transmissions to assure every truck operator exactly the right gear ratios for his particular road and load conditions.

"*Fuller Firsts*" reflect this front-running teamwork . . . Fuller *first* to perfect a trouble-free transmission for high speed diesels; first to offer a line of auxiliaries so complete that *any* requirement could be met; first to harness up to 400 hp. in a single unit transmission; first with the revolutionary ROAD RANGER® with all ten speeds shifted by *one* lever—and no gear splitting.

Get the right gear to move *your* part of the world; the Fuller line is described in the *New* Condensed Specification Folder. Ask for it.

Fuller TRANSMISSIONS®

FULLER MANUFACTURING COMPANY (Transmission Division), KALAMAZOO 13F, MICHIGAN

Unit Drop Forge Division, Milwaukee 1, Wis. • WESTERN DISTRICT OFFICE (SALES & SERVICE—BOTH DIVISIONS), 1060 E. 11th Street, Oakland 6, Calif.

One Hundred Years Of Civil Engineering

ASCE Plans September Convocation In Chicago to Celebrate Occasion: 25,000 Guests Expected

• ON November 5, 1852, the American Society of Civil Engineers held its inaugural meeting in what is now City Hall Park, in New York City. Twelve members attended, and elected James Laurie first President of a society formed "in the advancement of science". So began the Society which is to hold an 11-day conclave next fall in celebration of its hundredth anniversary. The 25,000-odd American and foreign engineers and guests who will assemble in Chicago from September 3 to 13 might well indicate to the original twelve, could they be present, that the looked-for advancement in science is on its way.

All Branches Represented

Fifty-one American and foreign professional engineering societies are already committed to this greatest convocation of engineers in history, and the ASCE's centenary has been welcomed by all branches of the engineering profession as the occasion for a series of meetings, symposia, and panels. Grouped with the ASCE for this celebration are its four associate societies, all members of the Engineers Joint Council. They are: American Institute of Mining and Metallurgical Engineers; The American Society of Mechanical Engineers; American Institute of Electrical Engineers; and American Institute of Chemical Engineers. More than 40 other engineering organizations are joining with them in the Centennial plans, and many foreign delegations who were invited have sent in acceptances.

The Centennial of Engineering, 1952, Inc., is organizing the celebrations. It is a special, over-all, nonprofit corporation drawn for this purpose from engineering and industry. Its Executive Committee consists of: Charles F. Kettering (Chairman), Director and Consultant of General Motors; Major Lenox R. Lohr (President), President of the Chicago Museum of Science and Industry; and Colonel Carlton S. Proctor, President of the American Society of Civil Engineers. Mr. Kettering is an honorary member, and Major Lohr a member, of the ASCE.

"The Relief of Broadway"

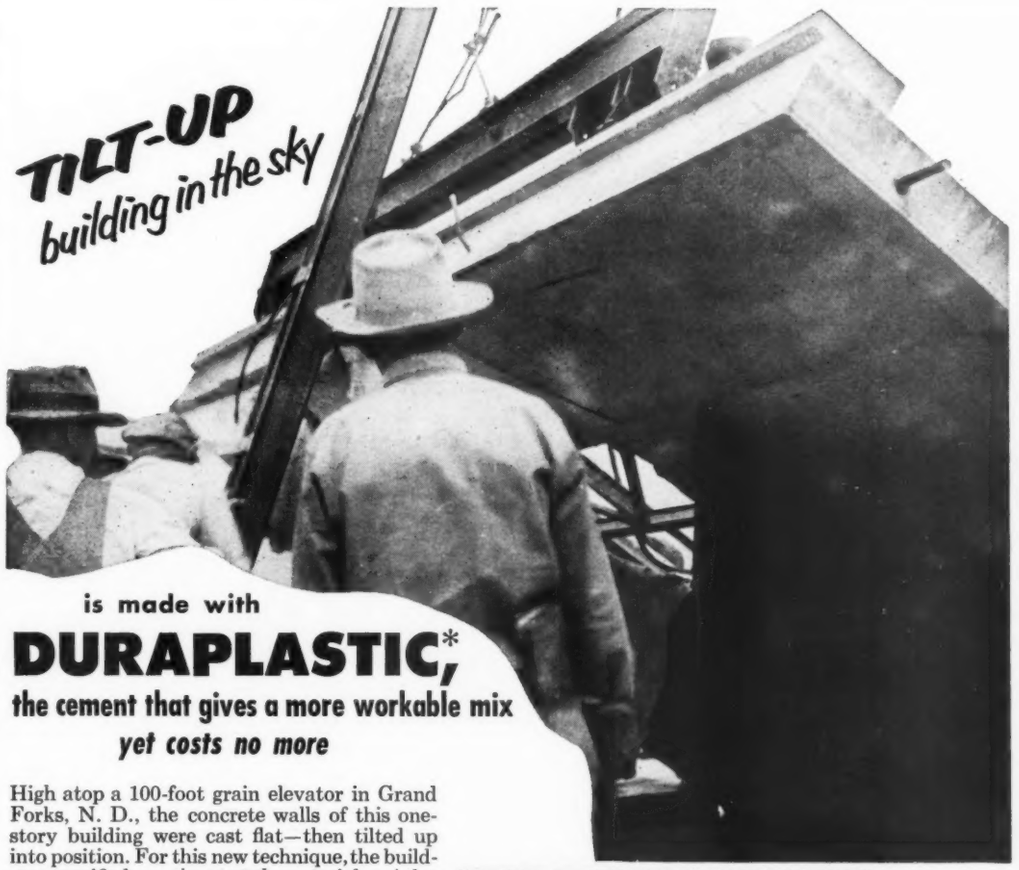
The Society has a proud record of achievement since those early days when President Laurie, at a meeting two months after the inauguration, read the first engineering paper ever presented to the Society. His subject was a problem that is still with us—traffic. Worried, no doubt, by the incessant clatter of hoofbeats outside his Broadway office, and the snarls of horse-drawn vehicles in the streets, he submitted a manuscript entitled "The Relief of Broadway", in which he embodied "a plan for placing railway tracks above the level of the street". One hundred years later, the traffic problem is still being debated by members of the Society, though now it is only one of millions of others under discussion.

Pageant of Progress

The big show in Chicago is to include many items of interest. The Chicago Museum of Science and Industry will hold an exhibit and pageant—"Century of Engineered Progress"—in which it is hoped to show how this progress has resulted from the engineer's working partnership with management, risk capital, and skilled workmen in a free-enterprise atmosphere. In the words of the ASCE announcement, "It is intended that the exhibit and pageant shall

(Concluded on next page)

Fluorescent-painted Trafficones (manufactured by Interstate Rubber Products Corp.) now help control traffic on the New Jersey Turnpike and are visible night and day. Looking like steel, the 30-inch-high Trafficone is actually made of rubber, so that its flexibility cuts the hazard of collision.



is made with

DURAPLASTIC,*

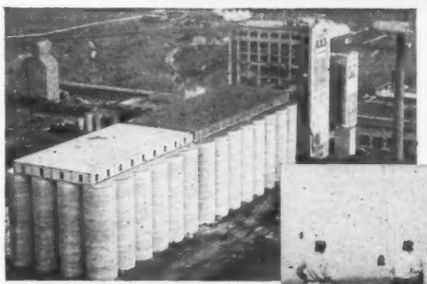
the cement that gives a more workable mix

yet costs no more

High atop a 100-foot grain elevator in Grand Forks, N. D., the concrete walls of this one-story building were cast flat—then tilted up into position. For this new technique, the builders specified a *time-tested* material – Atlas Duraplastic air-entraining portland cement.

They already had proof of Duraplastic's performance—because the elevator below was also Duraplastic-made! The increased plasticity and cohesiveness of Duraplastic concrete, which aids proper placement and helps to improve surface appearance, resulted in this neat slip-form job.

For more than a decade, Duraplastic has made better concrete for all types of structural jobs. Yet it sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.



General Contractor: Northern Construction Co., Grand Forks, N. D.

Sub-Contractor: Hagenson Construction Co., Minneapolis, Minn.

DURABLE JOB—Water gain and segregation are minimized by Duraplastic's air-entrainment feature, and resulting concrete is fortified against the effects of freezing-thawing weather.

THE MIX SHOWS—There's an important difference when the mix is made with Duraplastic cement. Less mixing water is required for a given slump, yet the concrete is more plastic, more uniform and easy to place.

**"Duraplastic" is the registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company*

ATLAS® **DURAPLASTIC**
AIR-ENTRAINING PORTLAND CEMENT

Makes Better Concrete at No Extra Cost

CE-D-138

"THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

OFFICES:
Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

SASGEN
New Electric-Powered
CHAMPION DERRICK

Boom only can be supplied for use with old-style Mast and bottom

Single line cap. 300# @ 100 feet per minute

Double line cap. 600# @ 50 feet per minute

The most complete line of contractors' derricks, hoists, and winches. Write for catalog.

The Sasgen line is handled by leading equipment distributors everywhere.

SASGEN DERRICK COMPANY
3131 W. Grand Avenue, Chicago 22, Illinois

One Hundred Years Of Civil Engineering

(Continued from preceding page)

show why, during the 100 years of the life of the American Society of Civil Engineers, American industrialization has given to the world more of the comforts and conveniences of existence than had come from all peoples during the preceding 5,000 years." Other highlights of the Chicago convocation will include both general sessions and an extensive program of ASCE technical sessions, the most comprehensive yet.

Nation-Wide Events

Apart from the Chicago convocation in September, this centennial year will see a major convention of ASCE members in Denver, Colo., on June 16 to 20; another convention has already taken place in New Orleans, La., March 5 to 7. A tour by the President, Colonel Proctor, forms another part of the Centennial, and it is already under way; Colonel Proctor has spoken in several cities and is scheduled for more than 50 meetings during the year. Scores of local observances under the sponsorship of the Society's sections, subsections, and student chapters are planned throughout the nation.

Leadership of the Engineer

Colonel Proctor, who, as well as being President of the ASCE, is President of Moran, Proctor, Meuser & Rutledge, New York, N. Y., summed up, in a recent address before the Society's Virginia Section at Richmond, the aims of the Centennial. His theme was the duty of the engineer to exert leadership in national affairs. The Centennial will show two things, said Colonel Proctor: the part the engineer has played in making the nation great; and, by implication, his failure to meet fully his obligations to the public welfare. In effect, he said, engineers have never performed more than half their total job, for their responsibilities must include the conservation of the results of their efforts. Labor-saving devices, higher standards of living, have created a vast amount of leisure, and the fact that this has become nonproductive leisure is only of academic interest to the average engineer. He has been the prime mover in a situation whose solution he has passed on to social scientists, lawyers, and clergy—a situation which the politician has been quick to exploit.

Today, when we are challenged by a world-wide politico-economic philosophy based on the premise of maximum return for minimum effort, continued Colonel Proctor, it is only by providing leadership that engineers can conserve the fruits of their labors. A philosophy preaching indolence, socialized usurpation of private enterprise, and the super-state with its managed economy has, as its inevitable attendant, a loss of respect for creative effort, an acceptance of the unethical and the expedient, and a sacrifice of religion. It is the road to communism, and we are being led down that road under the banner of stateism. Let the engineer therefore, concluded Colonel Proctor, combat lethargy and indifference by his creed and his daily professional life. The vast majority of voters are intelligent, decent, and are thoroughly alarmed at the growing power of stateism. All they want is leadership in which they have confidence. Because the average citizen has trusted in the works of the engineer, he has confidence in the integrity of the engineer's analytical judgment.

Local section meetings of the ASCE, formation of special committees, and the co-ordination of efforts from a local to a national level should now be the goal of the country's engineers, said Colonel Proctor. Let them accept every opportunity to talk to groups, large and small, and otherwise exert leadership individually and collectively.

Convocation Committee

The Convocation Committee of the Centennial consists of: Dr. Henry T. Heald (Chairman), Chancellor of New York University; E. L. Chandler (Manager), Assistant Secretary of the ASCE; and Frank Edwards (General Manager of the Centennial of Engineering, 1952, Inc.), Illinois Institute of Technology.

Booklet on Steel Buildings

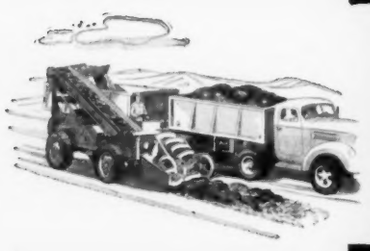
A folder on steel and aluminum buildings is available from John Cooper Co., 293 Second St., Hackensack, N. J. It illustrates various models being used as factories, shops, offices, warehouses, and garages.

The frames are of structural steel and the siding and roofing are galvanized steel or aluminum. The company specializes in small steel buildings available for immediate shipment.

This literature may be obtained from the company, or by using the Request Card bound in at page 16. Circle No. 811.

New Trailmobile President

William A. Burns, Jr., recently assumed the duties of President of Trailmobile, Inc., Cincinnati, Ohio, manufacturer of trailers and a subsidiary of Pullman, Inc. Mr. Burns, who had been Vice President and General Sales Manager of the company since 1950, succeeds George M. Bunker.



Announcing
THE NEW
ATHEY FORCE-FEED
HiLoader

Clamshells, front-end loaders, conveyor-type bucket loaders, crawler mounted rigs — they're all outmoded on stockpile or windrow loading since the introduction of the new Athey HiLoader.

HERE'S WHY THE ATHEY HiLoader IS BETTER

HI-CAPACITY
10 yds. per min.

HI-FLEXIBILITY
Loads from any stockpile or windrow.

HI-MOBILITY
20 MPH

HI-LOADING
12' 10" Discharge Height

HI-SAVINGS
One Operator, Lower Maintenance

HI-COMFORT
Operators like it. They sit or stand and drive it like their automobile.

The New Athey HiLoader will boost your production, cut your costs and give you more savings. Designed for more efficient and faster loading from stockpile or windrow, the HiLoader is the result of four years of research, engineering and testing. It is a "field proved" machine backed by performance on scores of tough jobs in a variety of industries. See it in action. Prove to yourself this is your best answer to lower your increasing costs. See how the auger feeder, the discharge conveyor that can be swung 45° left or right, short wheelbase, cleated main conveyor, full-floating underslung paddle-blade feeder, large tires and simple controls all add up to the most practical loader in the field today.

For more complete information on this sensational machine, wire, phone or write:

ATHEY PRODUCTS CORPORATION
5631 West 65th Street, Chicago 38, Illinois

or see your Athey-"Caterpillar" distributor.

Athey FORCE-FEED HiLoader

HOW TO MAKE 1 CONCRETE VIBRATOR DO THE WORK OF 2-

A prominent user of Vibro-Plus Internal Vibrators says one Vibro-Plus does the job of two ordinary vibrators. He says his concrete tests very high—and costs substantially less. Vibro-Plus will save money for you, too—cutting your concrete time and labor costs up to 60%. There are gasoline, electric and pneumatic models (with shafts and heads all interchangeable). All three deliver vibrating frequencies of from 11,000 to 15,000 per minute...yet operating and maintenance costs are low. Write today for bulletins and nearest distributor.

VIBRO-PLUS PRODUCTS, INC.
54-11 Queens Blvd., Woodside, L. I.

FIRST CLASS
Permit No. 280
(Sec. 34.9 P.L. & R.)
New York, N. Y.

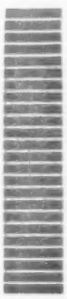
BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

3c - POSTAGE WILL BE PAID BY

Contractors and Engineers Monthly

470 FOURTH AVENUE

NEW YORK 16, NEW YORK



FIRST CLASS
Permit No. 280
(Sec. 34.9 P.L. & R.)
New York, N. Y.

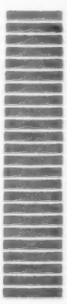
BUSINESS REPLY CARD
No Postage Stamp Necessary if Mailed in the United States

3c - POSTAGE WILL BE PAID BY

Contractors and Engineers Monthly

470 FOURTH AVENUE

NEW YORK 16, NEW YORK



Contractors and Engineers Monthly - Request Card - Apr. '52

Please send me information on new products and/or catalogs described in the editorial columns of this issue, as circled below:

701	702	703	704	705	706	707	708	709	710
711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730
731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750
751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770
771	772	773	774	775	776	777	778	779	780

781	782	783	784	785	786	787	788	789	79
791	792	793	794	795	796	797	798	799	8
801	802	803	804	805	806	807	808	809	8
811	812	813	814	815	816	817	818	819	8
821	822	823	824	825	826	827	828	829	8
831	832	833	834	835	836	837	838	839	8
841	842	843	844	845	846	847	848	849	8

Name_____ Title_____
(Please Print)

*Company or Gov't Dept._____

Address_____

City_____ Zone_____ State_____

*

Listing of your Business Connection is essential for handling literature request

Contractors and Engineers Monthly - Request Card - Apr. '52

Please send me further information on products shown in the Ad on:

Page_____ Product_____ Adv._____
(Advertisers Name)

Page_____ Product_____ Adv._____

Page_____ Product_____ Adv._____

Page_____ Product_____ Adv._____

In addition I would like to receive information on the following:

_____

_____

Name_____ Title_____
(Please Print)

*Company or Gov't Dept._____

Address_____

City_____ Zone_____ State_____

*

Listing of your Business Connection is essential for handling literature request

Outdoor Advertising: Florida Examines Law

At a joint meeting of the Right-of-Way and Legal Affairs Committees of the American Association of State Highway Officials, held at Omaha, Nebr., last fall, the legal aspects of outdoor advertising along Florida's highways came under review.

Prior to 1941, advertising signs were turning the state's highways into eyesores and public hazards. They appeared along right-of-ways on posts, trees, buildings, outhouses, or anywhere they could fit. In 1941, however, the Florida Outdoor Advertising Bill was introduced in the State Legislature and was passed. The women of the state take a large part of the credit for this success, as it was the hard work and united efforts of Florida's garden and women's clubs that, by lobbying public opinion, overcame the protests of the advertising and commercial interests.

William W. Stalvey, Assistant Attorney, State Road Department of Florida, told the meeting that the Outdoor Advertising Law was not popular in certain quarters, and during 1941 two attacks were made on its constitutionality by commercial advertisers. However, these complaints, based largely on the rights of private property, were dismissed by the courts. The relevant Florida statute cited by the court may be summarized as follows:

Outdoor advertising signs are prohibited (1) if they are within 15 feet of the outside boundary of any Federal or state highway or within 100 feet of any church, school, cemetery, public park, public reservation, public playground, state or national forest, or railroad intersection outside the limits of a city or town; (2) if they move or rotate or display intermittent lights; (3) if they use the word "Stop" or "Danger", or imitate official signs; (4) if they are placed on the inside of a curve or in any way so as to restrict the highway user's view of oncoming traffic.

The two arguments against outdoor advertising most in evidence during the legal proceedings were those of safety and esthetics. However, though it was conceded that too many signs distract drivers' attention from the road, opinion was that section 1 of the statute could not be upheld merely on the ground of public safety. It was felt, however, that the section of the statute could be upheld on esthetic grounds, as the traveling public had a right to enjoy an uninterrupted view of the scenery from the highways.

Joe Burnett, Director of the Outdoor Advertising Division and a former advertising executive, later addressed the meeting and explained how he goes about removing offending signs. Immediately on taking office he started a cleanup and enforcement campaign, and streamlined his staff. His good-will campaign, greatly helped by women's garden clubs throughout the state, has resulted in the removal of a large number of Florida's road eyesores. Tact, combined with firmness, in dealing with those who erect the signs has brought gratifying results, and more are expected.

Booklet on Use of Alidades

To aid field engineers in the use and adjustment of alidades, a 28-page pocket-size service booklet has been issued by W. & L. E. Gurley, Station Plaza, Troy, N. Y. Information on exploration and map making, as well as detailed instructions on stadia surveying and the use of the Beaman stadia arc, are included in "Service Booklet C".

The second half of the booklet deals with alidade adjustments, and includes sections on parallax, striding level, cross-level rectification, collimation, control level, gradienter, circular level, compass needle, finder sights, and Beaman stadia arc index.

The literature may be obtained direct from the company, or use the Request Card bound in at page 16. Circle No. 806.

Data on Road Drag Broom

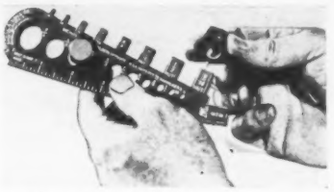
Literature on steel-wire road drag brooms is available from Van Brush Mfg. Co., 327 Southwest Blvd., Kansas City, Mo. Constructed of hardwood lumber, the broom is 6 inches wide filled with 3 tufts of wire folded over and protruding 5½ inches. It is made in any length up to 12 feet.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 761.

Bolt and Nut Gage

A pocket-sized bolt and nut gage is announced by Sorrell Mfg. Co., 15017 Detroit Ave., Lakewood 7, Ohio. It gages bolts and screws from No. 8 through ¾-inch diameter and nuts from No. 8 through ⅝-inch diameter, and is made of red wear-resisting Polystyrene plastic.

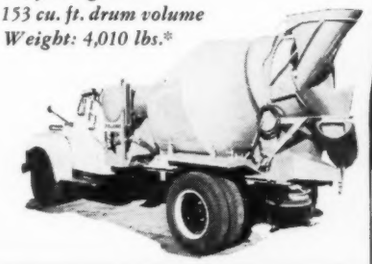
Bolts are gaged by pushing them through holes and nuts by dropping them on plug gages along the top of the measuring device. The plug gages also determine whether the nut is coarse or fine thread. The gage is said to be accurate to 0.005-inch tolerances in critical dimensions and measures 7¼ inches over-all. Sorrell points out that the gages are available at special quantity prices for use as gifts, with name, address, etc., hot-stamped in gold on the reverse side.



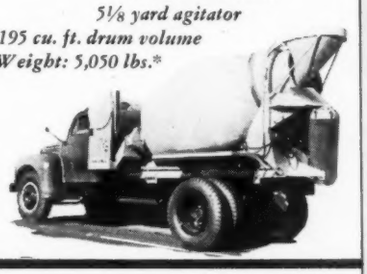
This pocket-size plastic gage measures bolts and screws from No. 8 through ¾-inch diameter and nuts from No. 8 through ⅝-inch diameter.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 723.

3 YARD MIXER
3¾ yard agitator
153 cu. ft. drum volume
*Weight: 4,010 lbs.**

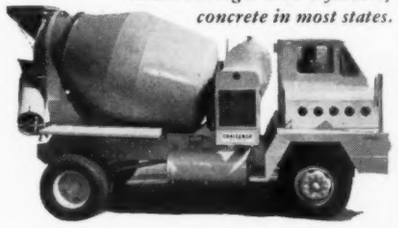


4 YARD MIXER
5⅛ yard agitator
195 cu. ft. drum volume
*Weight: 5,050 lbs.**



6½ YARD MIXER
8 yard agitator
313 cu. ft. drum volume
*Weight: 7,000 lbs.**

M-36 . . . a 145" wheelbase, two-axle truck with 4 cu. yd. Challenge Mixer . . . legal with 4 yards of concrete in most states.



only CHALLENGE (Member NRMCA) offers 6 SIZES

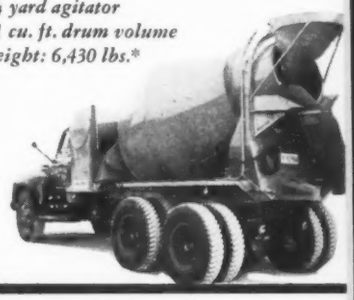
Enables Operators to Take Full Advantage Of BOTH The PHYSICAL And LEGAL Capacity Of Their Truck...At The Same Time Help Contractors Increase Their Margin of Profit.

Challenge . . . the most complete line of truck mixers on the market, provides the greatest possible flexibility in fitting a mixer and truck together to legally haul a full, rated-capacity payload of specification concrete. There's no need to settle for 3 yards of concrete when you can call a Challenge operator with a 3½ yard mixer, or 4½ yards of concrete when you can call a Challenge operator with a 5 yard mixer!

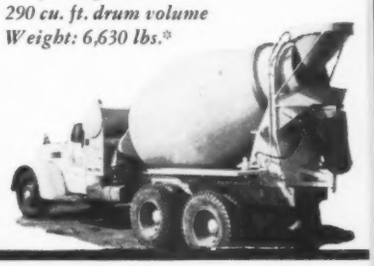
Patronize the operator with the Challenge fleet. He'll supply you with more concrete in fewer trips, and take less stand-by time for the men on your job . . . enabling you to increase your margin of profit on every pour!

3½ YARD MIXER
4¼ yard agitator
174 cu. ft. drum volume
*Weight: 4,150 lbs.**

5 YARD MIXER
6¼ yard agitator
241 cu. ft. drum volume
*Weight: 6,430 lbs.**



6 YARD MIXER
7¼ yard agitator
290 cu. ft. drum volume
*Weight: 6,630 lbs.**



M-310 . . . A 163" wheelbase, three-axle truck with 6 cu. yd. Challenge Mixer . . . legal with 6 yards of concrete in many states.

COOK BROS. EQUIPMENT CO.

Please send complete information on the 1952 Challenge Mixers, together with the name and address of my nearest Challenge Dealer.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

COOK BROS. TRUCK EQUIPMENT

COOK BROS. EQUIPMENT COMPANY
1815 No. Broadway, CApitol 2-9111
Los Angeles 31, California

*Above weights are typical scale weights and are subject to minor variation only.

Exclusive National Distributors for CHALLENGE, the modern, streamlined truck mixer

Boston VA Hospital Nearing Completion

1,000-Bed 14-Story Structure Has Exterior Masonry Walls, Reinforced-Concrete Frame and Floors

• THE 1,000-bed General Medical Hospital being built in Boston, Mass., for the Veterans Administration by the U. S. Army Corps of Engineers, New England Division, is scheduled for completion around the middle of the year. Coolidge, Shepley, Bulfinch & Abbott, and Charles T. Main, Inc., of Boston, are the architects-engineers. McCloskey & Co. of Philadelphia, Pa., is the general contractor. Total estimated cost of the project, which was started in March, 1950, is $12,000,000.

Located on a 17-acre site in the Jamaica Plain section of Boston, the plot fronts on South Huntington Avenue at the intersection of Heath Street. The new VA facility includes five buildings. The principal structure is the 14-story main hospital, with a penthouse on top and its main elevation and entrance along South Huntington Avenue. To the rear is the 125 x 78-foot boiler house, 49 feet high, with a 175-foot chimney. Attendants' quarters consist of a single-story building, 119 x 37 feet. Motor vehicles are kept in a one-story garage, 143 x 44 feet. Staff and nurses' quarters are in a five-story building, 118 x 43 feet.

With the exception of the attendants' quarters, which are built of wood, the buildings are of reinforced-concrete construction for the foundations, frames, and floors. Exterior walls consist of gray-white glazed face brick with manganese spots, except for the boiler house where red bricks are used. The 4½-inch-thick brick veneer is backed with 8-inch concrete blocks to give the exterior walls a total thickness of 12½ inches.

Built on Rock

Three streets were closed at the site to make room for the hospital, and several dwellings and commercial buildings were either razed or removed before excavation for the foundation got under way. Part of the plot had once been a quarry, and beneath the entire area is a stratum of rock of varying depth from the surface. For the foundation of the main building alone 21,000 cubic yards of rock was excavated. Some of the dirt overburden was stockpiled for use later as backfill or in landscaping operations.

Average depth of excavation was to elevation 45, or 30 feet below the 75 grade of the first floor in the main hospital building. Finished basement floor grade is 62, and the finished subbasement is 49.5. The subbasement does not extend under the entire building, but crawl space is provided. Roof elevation is 242.5, giving the building a total height of 167.5 feet above the first floor.

The main building is roughly T-shaped, with several wings projecting from the central structure. Across the top of the T is the west elevation along South Huntington Avenue, measuring 400 feet, and comprising wings A, B, and C. Wing D, the vertical part of the T, extends to the east 270 feet. Wing E off the north side of D is a single story containing the laundry facilities, and measures 335 x 84 feet. Other wings off the front and sides of the main structure are somewhat less than 14 stories in height to form a setback pattern in the elevations.

Concrete Construction

All concrete placing and the masonry wall work were handled by the general contractor. Transit-mix concrete was used throughout and was supplied by the J. P. O'Connell Co. of Boston, with the reinforcing material coming from the Northern Steel Co., also of Boston. Where the foundation is not set directly on the rock, it is carried down to the rock by means of caissons or pedestals averaging 3½ feet square x 3 feet deep. They support the concrete columns for the building, which average 26 inches square at the bottom and decrease in size toward the upper floors. The columns form bays averaging 17 x 20 feet.

C. & E. M. Photo

South elevation of General Medical Hospital, Boston, Mass., showing C and D wings. Between the wings will be a sunken garden.

Concrete foundation walls up to the first-floor level are 12 inches thick.

In pouring the floors, Bethlehem Steel Co. spreader-type metal pan forms were used. Joists are 8 inches

(Continued on next page)

Sinclair Litholine PROVED in wheel bearing tests

THE critical test of any multi-purpose grease is in its performance in the wheel bearings of heavy-duty mobile equipment. Sinclair LITHOLINE® Multi-Purpose Grease has been proven an outstanding heavy-duty wheel bearing lubricant in exhaustive, year-round tests.

One test was made in a Mid-West city bus line. An inspection after 20,000 miles showed the bearings were smooth and well-lubricated. There were no signs of scratching, pitting, heat spots, gum or varnish. Sinclair LITHOLINE's original character was well-maintained – there was no slumping in the bearing or housing, no softening or liquefying, no separation and no leakage through seals.

This safe, sure lubrication of one of the most vital points of heavy-duty mobile equipment... and its outstanding performance at all other lubrication points ...prove that Sinclair LITHOLINE is a real multi-purpose grease... winter and summer.

Send for a free folder describing demonstrations of the superiority of LITHOLINE. Contact your local Sinclair Supplier or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

for every grease lubrication job... SINCLAIR

deep below the bottom of the slab, 7 inches wide at the top, and 5 inches wide at the bottom. They are spaced on 20-inch centers, and the slabs are 4 to 6 inches thick. A typical floor slab consists of 2½ inches of regular concrete (a 5¾-bag batch) topped by 1¾ inches of finished concrete (an 8.2-bag batch). Darex air-entraining agent gave the concrete an average 4 per cent air content, and the slump averaged 3½ inches. Finished concrete developed a strength of 3,600 psi at 28 days.

Metal pan forms were shored up with either 4 x 4 or 6 x 6 posts, placed under the joists at 4-foot intervals. Two steel hoisting towers were set up, a double-platform one at the front of the building, and a single-platform one at the rear, for raising the concrete to the desired level. The towers extended 20 feet above the main roof. At their foot were 4-yard receiving hoppers into which the truck mixers discharged. The concrete was transferred to floor hoppers by means of a 1-yard skip on the hoist, and from the floor hoppers it was distributed to the forms with rubber-tired hand buggies. The latter were pushed over wooden runways supported on legs set down in the joists. As the concrete was placed it was vibrated, then screeded by hand, and cured by a combination of paper and water. The largest single pour for a day was 400 cubic yards.

C. & E. M. Photo

For the hung ceilings a Van Dorn ¾-inch electric hammer drives bolts into the concrete beam for the hanger lugs. The hammer works by foot pressure.

Building Interior

Floor surfacing over the finished concrete varies according to the function of the different rooms. Asphalt tile is used in corridors and in a great many of the rooms. Interior wall finishes also show variety according to the intended usage. Behind the exterior Hanley brick is the concrete-block back-up supplied by Massachusetts Cement Block Co. of Boston. Water-proofing was applied over the rear face of the concrete blocks. Most of the walls were plastered, but some of the other surfaces include such materials as structural glazed tile in the kitchens, structural glass in the operating rooms, or cement asbestos acoustical tile in the library. The ceiling of the latter room is covered with metal-pan acoustical tile, which is also widely used in corridors and in staff offices.

C. & E. M. Photo

A Baker scaffold supports the workman who is installing Softone acoustical tile in a first-floor staff office.

Hung ceilings are used throughout the building, thus providing from 1½ to 2 feet of space between the bottom of the concrete beams or floor joists and the ceiling itself. Utilities—pipes, ducts, conduits, etc.—are carried in this space concealed from view. Part of the building is air-conditioned, while the rest has a ventilating system.

The ceilings were hung quickly and efficiently from metal hanger straps secured to the bottom of the beams or joists. In a typical operation, the installer, working from a Baker scaffold, first drilled a hole, ¼ inch deep, into the bottom of the concrete member as a starter for the bolt supporting the hanger lug. The bolt was then driven into the concrete with a Van Dorn ¾-inch electric hammer mounted on a folding timber extension arm. The base of this arm rested on the planks of the scaffold, and was connected to the upright part of the device by a hinge. The installer actuated the driving mechanism by pressing his foot on the base section. Once the lugs were in, the hanger straps were bolted to them, and the ceiling hung from the straps.

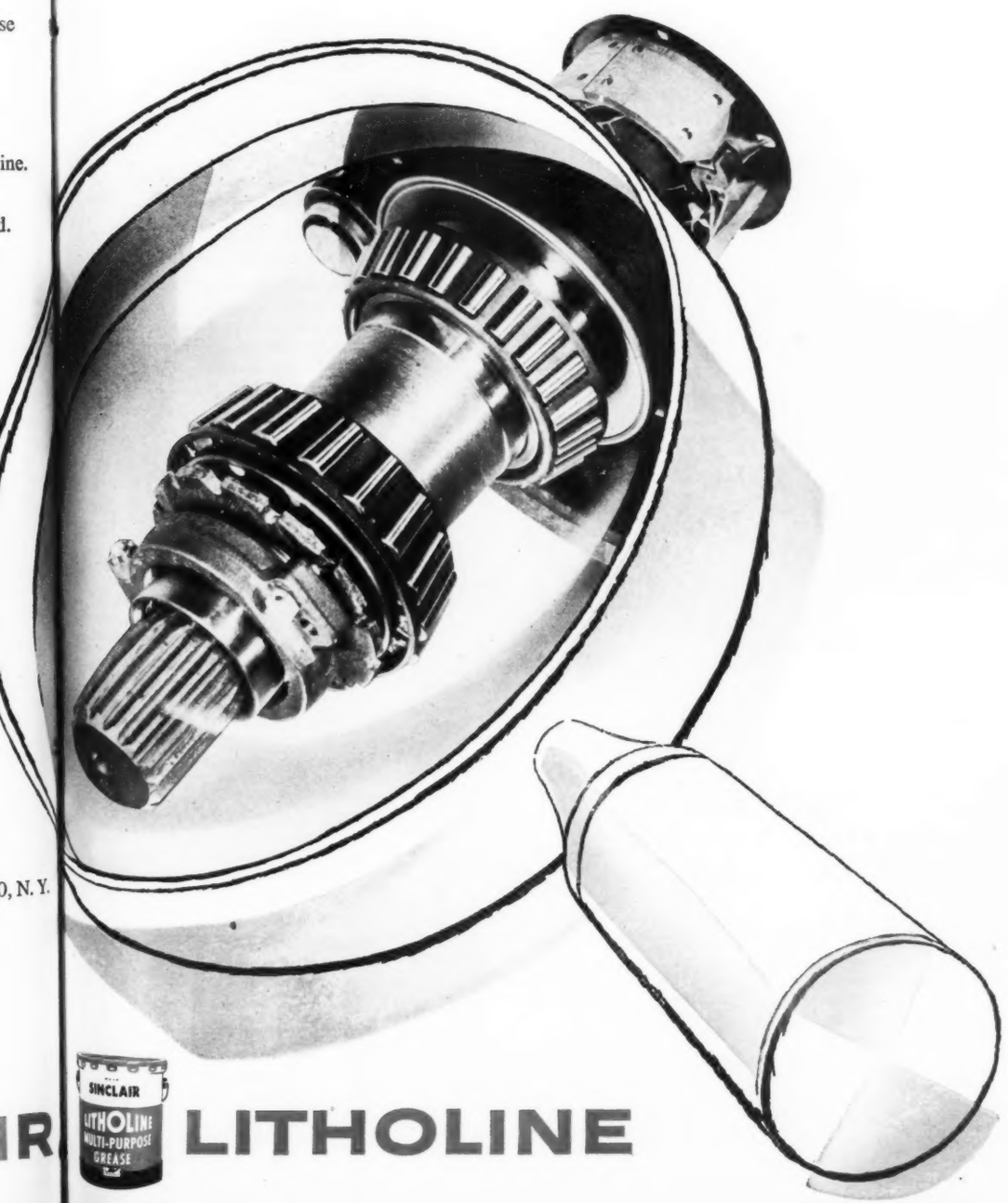
Emphasis on Cleanliness

As befits a hospital, the emphasis in the design and construction is on a building where dirt and dust have no opportunity to accumulate. For instance, wall bases of terrazzo have been placed against the concrete blocks in most of the rooms, and brought to a high gloss with Cavicchi polishing machines. The Softone acoustical tile contributes a clean appearance overhead. Plaster walls are usually coated with

(Concluded on next page)

C. & E. M. Photo

In one of the ward rooms a Cavicchi polishing machine gives a high gloss to the terrazzo wall base.



Boston VA Hospital Nearing Completion

(Continued from preceding page)

white paint.

On the low wings, such as the kitchen and dining room, the roof consists of precast-concrete planks, but on the main building the roof is a poured slab topped with built-up material. There are five stairwells in the hospital, and ten Otis elevators for passengers and service. The structure is heated by steam generated in the boiler house and piped underground to a steam-distribution room in the subbasement of the main building. From there it is piped to all floors.

In the boiler house are three coal-burning boilers supplied by overhead bunkers. The coal going into each boiler is weighed, and handled by an automatic conveyor system. A dustless ash-disposal method is in use.

Besides the construction of the five buildings, the general contract includes topsoiling, seeding, planting, and landscape work; roads, walks, parking areas; exterior distribution systems for gas, water, electricity, communication, and steam; and sanitary and storm sewers.

Quantities and Personnel

Major items of construction for the main hospital building include the following:

Excavation	65,795 cu. yds.
Concrete	24,385 cu. yds.
Reinforcing steel	2,717 tons
Concrete-floor finishing, 1¾-inch	2,800 cu. yds.
Brick	2,000,000
Back-up concrete block	95,733 cu. ft.
Windows	3,963

McCloskey & Co., the general contractor, employs an average force of 850 men under the direction of George Brenner, General Superintendent.

The Corps of Engineers, U. S. Army, is represented by William Crossland, Resident Engineer for Charles T. Main, Inc., Architects-Engineers. The New England Division of the Corps of Engineers is headed by Col. H. J. Woodbury, Division Engineer.

One-Man-Operated Unit Fills, Tamps, and Travels

A 4-page bulletin on the Cleveland Model 80—a backfiller, tamper, and side crane in one unit—is offered by Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio. It includes action photographs of the many operations performed by the Model 80. It also contains complete specifications and dimensions.

This literature may be obtained from the company by requesting Form S120, or by using the Request Card at page 16. Circle No. 793.

Brummel's quick-connector hooks can be joined or detached with a turn of the fingers. They are available in several sizes and types.

Turn of the Fingers Connects New Hooks

Hooks which can be joined or detached by a simple turn of the fingers have been developed by Brummel Hook Co., 1619 Winona Ave., Chicago 40, Ill. Made from either manganese bronze or an aluminum base, they can be used to attach lines to other lines, wire rope, chain, or to fixed objects.

To make the connection, one hook is held at a right angle to the other and then slipped in over the chisel-type edges. Several sizes and types of fast or fixed-eye, swivel, fixed-jaw, and bolt hooks are made, as well as floor or platform fittings.

Further information may be secured from the company. Or use the Request Card bound in at page 16. Circle No. 814.

Sales Engineer for Simplex

Arthur Templeton is the new Southwestern Divisional Sales Engineer for Templeton, Kenly & Co., Chicago, manufacturer of Simplex mechanical and hydraulic jacks. He will make his headquarters at 6505 Aberdeen Ave., Dallas, Texas, and will cover the states of Texas, Oklahoma, and Louisiana. Mr. Templeton, who is the son of the company's founder, has been with the firm for six years.

TAGLINE CONTROL

HERE'S WHY:

You get *more work* out of a bucket that holds steady and is back in position *quicker* for another bite. Rud-O-Matic Taglines have ample coil spring power to provide constant tension for steadying the largest clamshell buckets at any angle of the boom.

You get *lower costs* through faster operation coupled with Rud-O-Matic's trouble-free service. No pins, weights or tracks to get out of whack, only the simplest of working parts. Compact – and easy to install on any crane.

Rud-O-Matic Taglines are made in 8 models for all bucket sizes, and are supplied with cable and installation equipment. *Immediate delivery from your nearby equipment dealer – or send coupon below for details.*

I'd like more information on Rud-O-Matic Taglines. Send literature and complete details.

Name_____

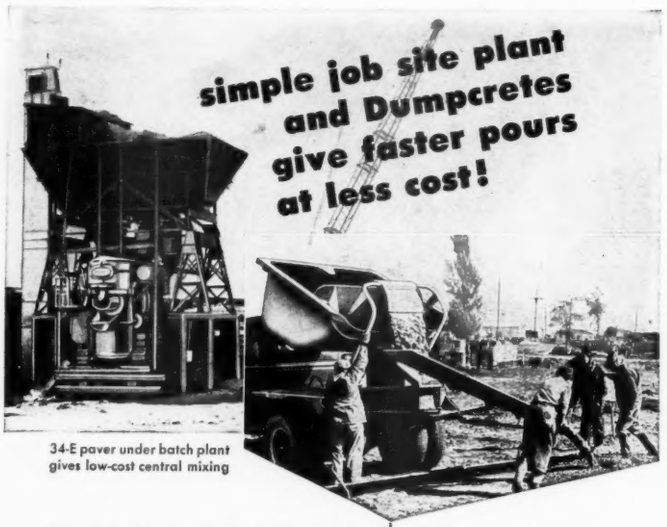
Company_____

Address_____

City_____ Zone____ State____

McCAFFREY-RUDDOCK Tagline CORPORATION

2131 East 25th Street • Los Angeles 58, California



34-E paver under batch plant gives low-cost central mixing

Here's a contractor who knows how to cut costs. His batch plant, plus a 34-E Paver gives him high-quality central-mixed concrete for a million dollar Kresge warehouse. When this 10,000 yard job is done, he'll move the whole plant to a new location for a highway job.

On both jobs, he'll use Dumpcretes. They'll save him time and money.

They charge fast. They travel fast. If you want a quick pour, they'll give you four yards in 60 seconds. And you can place *direct*—either through the long 13-foot chute, or into forms five feet high or into buggies, barrows or buckets.

They cost less—only ⅓ as much as a truck mixer. There's practically no repair and maintenance—the few moving parts are simple and rugged. Dumpcretes are money-in-the-bank for you. To get the details on 2, 3 and 4 yd. sizes, send the coupon today.

Please send booklet "12 Ways To Set Up For Central Mixing"

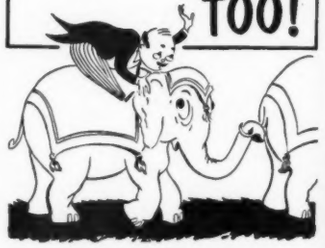
Name_____

Firm_____

Address_____

DUMPCRETE DIVISION
MAXON CONSTRUCTION COMPANY, INC.
632 TALBOTT BUILDING
DAYTON 2, OHIO

LE-HI Makes a Good Connection TOO!



Specify LE-HI for all Hose Couplings!

Wherever hose is used there is a LE-HI hose coupling to match—from small tubing to large industrial applications.... The complete LE-HI line includes:

- Air Tool Couplings
- Welding Hose Couplings
- Steam Hose Couplings
- Fire Hose Couplings
- Acid Hose Couplings
- Sand and Blower Hose Couplings

SERIES 100

SERIES 600

- Drilling Hose Couplings
- Oil and Gas Hose Couplings
- Agricultural Hose Couplings

. . . plus complete lines of hose clamps, air valves and manifolds.

Sold through leading distributors and rubber manufacturers only.

"Old Doc" says: "Write now for your free copy of the complete LE-HI catalog"

HOSE ACCESSORIES COMPANY
1704 Lehigh Ave.
Philadelphia, Pa.

LE-HI Makes a Good Connection!

LE-HI
HIGH and LOW PRESSURE
HOSE COUPLINGS
TRADEMARK REGISTERED

The Boss Whyteface steel measuring tape has a reel-like winding handle.

Steel Measuring Tape

A steel measuring tape with an aluminum case is announced by Keuffel & Esser Co., Adams and Third Sts., Hoboken, N. J. The Boss Wyteface is made in 50 and 100-foot lengths and features a wide sweeping reel-like winding handle and notched finger grips. Typical of the Wyteface line, it has black markings on a white background with the foot marks in red.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 795.

Spades, Shovels, and Scoops

Literature on a line of shovels, spades, and scoops is available from Ingersoll Steel Division, Borg-Warner Corp., New Castle, Ind. The company's hollow and plain-back shovels use a special cross-rolled type of steel. This rolling in one direction and then at right angles is said to remove the directional weakness present in straight-rolled steel, improve wearing qualities, and reduce the tendency to split. Also, a special heat treatment is said to toughen the cutting edges.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 784.

CHEMICAL
WEED
CONTROL

32-PAGE BOOKLET...

AVAILABLE FREE. Includes information on various recommended weed killers . . . directions for weed, grass and brush control . . . illustrations and data on various weeds . . . other valuable information applicable to practically all weed problems. Write today!

CHIPMAN CHEMICAL CO.
Dept. C, Bound Brook, N.J.

Manufacturers of

CHIPMAN
WEED KILLERS

CHLORATES 2,4-D
ARSENICALS 2,4,5-T

GIVE TO THE RED CROSS

Tractor Fork Lift

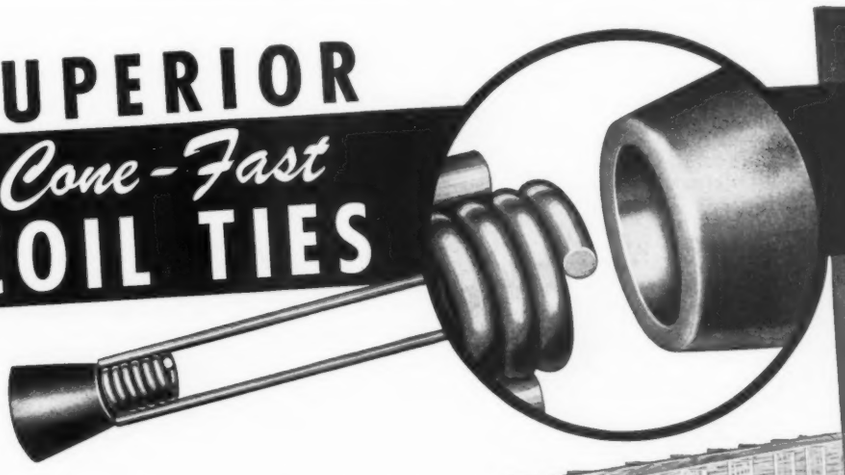
A heavy-duty tractor-fork-lift combination for handling materials on rough and sandy ground is announced by Tracto-Lift Co., 2011 Baltimore, Kansas City 8, Mo. The large tires are switched on the tractor to give maximum traction in the opposite direction; the transmission, tractor seat, and steering mechanism are also reversed. Rear counterweights give stability.

The unit is made in four sizes with 3,000, 4,000, 5,000, and 6,000-pound capacities. Fork lengths vary from 30 to 60 inches, with lifting heights to 12 feet 6 inches. Block, brick, scoop, hopper-dumping, and crane-boom attachments are also furnished. Minimum underneath clearance is 8 inches on the small or medium size and 10 inches on the larger models. The Tracto-Lift is said to travel at the high speeds of industrial tractors.

Further information may be secured from the company, or by using the Request Card at page 16. Circle No. 804.

Note how the large tires have been switched to the front of the Tractor-Lift for maximum traction. The fork-lift unit comes in capacities from 3,000 to 6,000 pounds.

SUPERIOR
Cone-Fast
COIL TIES



YOU CAN CUT YOUR FORM COSTS!

Because the cost of form work is a prime factor in the total cost of bridge piers and abutments, retaining walls, filtration and sewage disposal plants, and other engineering projects, it is obvious that the forming phase offers the greatest opportunity to save material and reduce labor costs.

The use of Superior Cone-Fast Coil Ties is one direct means of cutting costs and here's why: The *exclusive* feature of this tie is the extension of the coil beyond the ends of the wire struts (enlarged detail above) which allows a reamed Coil Cone to be fitted snugly in place before the opposing panel is erected. No separate gadgets are required. Cone-Fast ties are practically a "must" when large panels are used on walls where the workman cannot get inside the forms. Cone pointed Coil Bolts are easy to engage because of the large square openings in the cones. Bolt Holders (shown on panel form) keep bolts and washer on panel when stripping and moving for reuse.

Cone-Fast Coil Ties are available for Coil Bolts ½" to 1¼" in diameter and can be used with all types of forms. All working parts are returnable. For maximum efficiency plan your form work with SUPERIOR Cone-Fast Coil Ties.

REQUEST a copy of our 56-page catalog. It contains a valuable table for spacing studs, wales, and form ties.

SUPERIOR CONCRETE ACCESSORIES, INC.
4110 Wrightwood Avenue, Chicago 39, Illinois
New York Office: 1775 Broadway, New York 19, N. Y.
Pacific Coast Plant: 2100 Williams St., San Leandro, Calif.

Making Concrete Pipe

Methods of making 4 to 36-inch concrete pipe by the Packer-Roller-Head process are given in a 63-page booklet issued by Concrete Pipe Machinery Co., First and George Sts., Sioux City, Iowa. The booklet was prepared for manufacturers entering the pipe field. It describes markets, manufacturing processes and costs, profits, ASTM specifications, and gives miscellaneous data on the McCracken corrugated pipe.

This literature may be obtained from the company. Or use the Request Card at page 16. Circle No. 805.

Canny Scottie McBlock finds it doesn't pay to substitute . . . the BEST equipment is your BEST buy.
McKissick Speed Nut
SNATCH BLOCK
is your BEST buy
Three Good Reasons Why
SAVES . . . time
Two quick turns of the Speed Nut . . . block opens or closes. No bolts or nuts to remove or lose.
SAVES . . . effort
Line inserted or removed with no lifting or tugging.
SAVES . . . money
Smooth grooves prevent line wear. Drop forged heat treated steel throughout for safety.
WRITE FOR CATALOG OF ALL McKISSICK PRODUCTS
McKISSICK BUILDS A BETTER BLOCK FOR EVERY PURPOSE
McKISSICK
McKISSICK PRODUCTS CORPORATION
Box 2496 Tulsa, Oklahoma

Spex Block Adoption Of Pneumatic Rollers

Specifications today are not keeping pace with the development of heavy pneumatic-tire rollers, warns A. O. Williamson, Product Engineer for Wm. Bros Boiler & Mfg. Co. of Minneapolis. Speaking at the recent 50th Anniversary Meeting of the American Road Builders' Association in Houston, Texas, Williamson reported that in all but a few instances the rubber-tire units can be used only by special permission.

In addition to acceptance of the roller, specifications on layer depths must be amended. On recent projects where the 50-ton units were used, he said, the bottleneck was not caused by the compactors, as it had been on sheepsfoot jobs, but was the direct result of shallow layer depths. Williamson reported that U. S. Corps of Engineers tests indicate that pneumatic rollers can work effectively on layers up to 24 inches.

Optimum moisture control is another problem. Naturally, a sprinkling wagon operating up and down a 24-inch layer is not able to provide uniform moisture. Here Williamson suggested that borrow-pit moisture control, used successfully at Oahe Dam in South Dakota, could be adopted. This method divides the pit into two diked sections which are flooded and then used alternately.

He concluded his address by pointing to the optimistic reports on pneumatic rollers by the Corps of Engineers. He said he was looking forward to the day when these compactors will be accepted as a basic construction tool.

Arc-Welding Accessories

Three new bulletins on arc-welding accessories are available from General Electric Co., Schenectady 5, N. Y. GEC-865 illustrates and describes the line of ventilated welder's helmets, combinations of helmet and headgear, protective goggles, and welding lenses.

Bulletin GEC-866 lists such accessories as brushes, carriers, chipping hammers, weld gages, weld-spatter compounds, and protective aids. Chrome-tanned leather coats, bibs, pants, jackets, aprons, sleeves, gloves, and mittens are illustrated in Bulletin GEC-867.

This literature may be obtained from the company, or by using the Request Card bound in at page 16. Circle No. 792.

This precision selector cavity resonator is designed to eliminate radio and television interference caused by spurious and harmonic radiations of base-station 2-way radio transmitter equipment. Motorola, Inc., makes it.

Resonator Minimizes Harmonic Radiations

Television interference caused by spurious and harmonic radiations of base-station 2-way radio communications equipment can be eliminated by the addition of a Motorola precision selector cavity resonator, the company has announced. It is said to minimize such radiation from any transmitter antenna system and make it possible to use two or more transmitters on the same antenna without mutual interference.

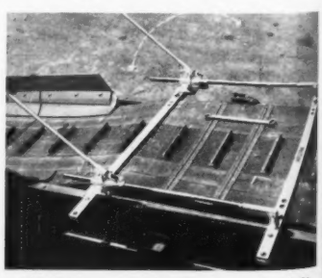
A cavity resonator is a very high Q-circuit which can be inserted into a line, connecting the transmitters and receivers with the antenna. Motorola cavities, designed for the 30-48, 72-76, 122-132, and 132-180-mc communications bands are temperature-compensated for optimum performance over wide temperature ranges.

Further information may be secured from the Communications & Electronics Division, Motorola, Inc., 4545 Augusta Blvd., Chicago 51, Ill. Or use the Request Card at page 16. Circle No. 755.

New Belt Stretcher

A new tool for putting a conveyor belt back together with all its required tautness is available from G. N. Crawford Equipment Co., 6714 Kelly St., Pittsburgh 8, Pa. The Farnco Far-Pul stretcher is said to save time and effort in changing or repairing a belt, and it can be handled by one man. It grips the belt ends between two bolted plates connected with two jacks on an adjustable bar, one on each side of the belt. A minimum pumping of the jacks brings the loose ends together, the company says. Each jack controls its side of the belt, permitting an accurate mesh of the stitched belt. The tool is made in sizes to fit belt widths from 8 to 36 inches.

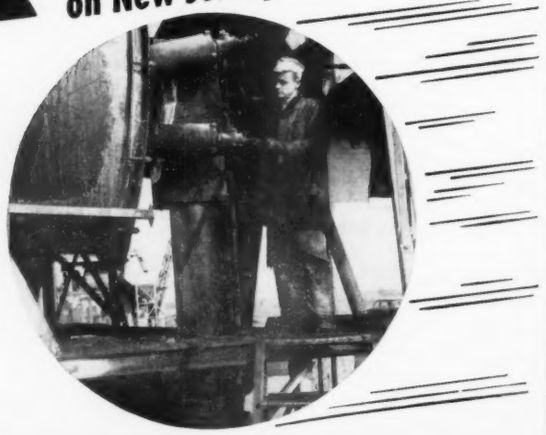
Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 776.



Changing or repairing a conveyor belt is said to be easy with the Farnco Far-Pul stretcher which pulls the ends of the belt together.

HOPKINS VOLCANIC UNITS

Help Set "Fireball" Pace on New Jersey Turnpike Project



The 118-mile New Jersey Turnpike is the biggest paving project of its type in the world, and the longest asphaltic-concrete job ever undertaken on so short a schedule. With only 5 months actual working time, and tough spex to meet, a terrific production schedule had to be maintained. So, to supply concrete for Sections 3 and 4, four huge asphalt plants were erected at Cranbury. Sitting side by side, each plant turned out 2-ton loads every minute. That's 8 tons a minute, or almost 500 tons per hour . . . a really "fireball" pace!

The four asphalt plants were all equipped with Hopkins Volcanic Dryer Units, and Mr. John McGarry, Vice President of the Tioga Construction Company, later wrote us as follows: "We were producing 25,000 tons of asphalt paving material a week. We found the Hopkins equipment does its assignment efficiently and with a minimum of maintenance."

Contractors throughout the country are setting new production records, and cutting costs, with Hopkins Volcanic Units. Want to know more? Your letter or phone call will bring descriptive literature, complete details, and follow-up by a Hopkins representative.

HOPKINS VOLCANIC SPECIALTIES, INC.
ALLIANCE, OHIO

Alloy-Steel Plate Repairs Worn Parts

A plate of special alloy steel for maintenance repair of muckers, crusher liners, chutes, scoops, and all equipment subject to abrasion and shock is announced by Allied Steel Products, Inc., 7835 Broadway, Cleveland 5, Ohio. Bulldog Tuf-a-brase can be flame-cut and bent to line bucket floors. It is also recommended by the company for repairing bucket doors and rebuilding the beds of vibratory feeders. It should be heated to a bright red for best results in bending. It requires no special rod or skill in welding. And it can be drilled and machined or sheared and punched with standard equipment.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 767.

Catalog on Oil Filters

A 38-page catalog on oil filters is available from W. G. B. Oil Clarifier, Inc., Kingston, N. Y. It describes the operation and design of the company's oil clarifiers and gives complete specifications on each unit. Drawings of brackets, adapter rings, and metal fittings are also included. A special table lists standard engine makes, models, original filter equipment, and the W. G. B. replacements.

W. G. B. clarifiers feature right-angle oil entrance for reducing sump disturbance, deep cartridge filtration, wide-open entering screen, and a fine-mesh muslin cover.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 747.

To Manage Cement Sales

James E. Taylor is now District Sales Manager of the Illinois-Wisconsin territory for Universal Atlas Cement Co. Formerly Assistant District Sales Manager, he succeeds Charles L. Peyton, who has retired. Mr. Taylor will headquarter in Chicago.

Line of Drilling Equipment

Literature on a line of drilling equipment is available from Paris Mfg. Co., Inc., 1401 S. Main St., Paris, Ill. The publications illustrate on-the-job uses of the Parmanco improved vertical and horizontal drill rigs.

The Model 51V vertical drill is powered by a 40-hp engine and drives 5 or 6-inch augers to depths of 80 feet. The Hi-Speed horizontal model drills 5, 6, and 8-inch holes to 100 feet. It has an auger rack for fast drill changing.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 749.

There is a GM Diesel Engine Distributor Near You

ALABAMA—Birmingham
ARMSTRONG EQUIPMENT CO.
Montgomery
ALABAMA MACH. & SUP. CO.

ARIZONA—Phoenix
O'CONNELL BROTHERS, INC.

ARKANSAS—North Little Rock
LEWIS-DIESEL ENGINE CO.

CALIFORNIA—Berkeley, Fort Bragg
WEST COAST ENGINE & EQUIP. CO.
Los Angeles
ANDERSON-O'BRIEN CO.
Stockton
MOORE EQUIP. CO., INC.

COLORADO—Denver
COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

CONNECTICUT—Hartford
HOLMES-TALCOTT, INC.

FLORIDA—Jacksonville, Miami
GENERAL MOTORS CORP.
Florida Diesel Engine Sales

GEORGIA—Atlanta
BLAYLOCK MACH. & EQUIP. CO.
Savannah
MORGANS, INC.

IDAHO—Boise, Idaho Falls, Twin Falls
SOUTHERN IDAHO EQUIP. CO.

ILLINOIS—Bellwood
D. D. KENNEDY, INC.

INDIANA—Lawrence
FLESCH, MILLER TRACTOR CO.

IOWA—Des Moines
STEPHENS-JONES, INC.

KANSAS—Grand Bend, Wichita
DIESEL EQUIPMENT CO., INC.

KENTUCKY—Lexington, Louisville
BOGIE EQUIPMENT COMPANY

LOUISIANA—Grand Island, Harvey
GEORGE ENGINE CO., INC.
Shreveport
UNITED TOOL CO.

MAINE—Portland
EASTERN TRACTOR & EQUIP. CO.

MARYLAND—Baltimore
McCLUNG-LOGAN EQUIP., INC.

MASSACHUSETTS—Boston
CLARK-WILCOX CO.

MICHIGAN—Detroit
EARLE EQUIPMENT CO.

MINNESOTA—Duluth, St. Paul
BORCHERT-INGERSOLL, INC.

MISSISSIPPI—Jackson
TAYLOR MACH. WORKS

MISSOURI—North Kansas City
K. C. DIESEL POWER COMPANY
St. Louis
WESTERN MACH. & ENG. CO.

MONTANA—Billings, Hardin
SEITZ MACHINERY CO., INC.
Kalispell, Missoula
MOUNTAIN TRACTOR COMPANY

NEBRASKA—Omaha
FEHRS TRACTOR & EQUIP. CO.
Scottsbluff
COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)

NEVADA—Reno
SIERRA MACHINERY CO., INC.

NEW MEXICO—Albuquerque
THE HARRY CORNELIUS CO.

NEW YORK—Buffalo
BROCK TRACTOR COMPANY, INC.
New York City
GRIFFIN EQUIPMENT CORP.
Syracuse
L. B. SMITH, INC.

NORTH CAROLINA—Beaufort
MACHINE & SUPPLY CO.
Greensboro
E. F. CRAVEN COMPANY

NORTH DAKOTA—Fargo
SWEENEY BROS. TRACTOR CO.

OHIO—Cleveland
GREAT LAKES DIESEL CO.
Columbus
CENTRAL OHIO TRACTOR CO.
Steubenville
RAY C. CALL COMPANY

OKLAHOMA—Oklahoma City
DIESEL POWER COMPANY

OREGON—Portland
GUNDERSON BROS. ENGRG. CORP.

PENNSYLVANIA—Philadelphia
FRANTZ EQUIPMENT COMPANY
Pittsburgh
HIGHWAY EQUIPMENT CO.
Wilkes-Barre
STANDARD EQUIPMENT CO.

SOUTH CAROLINA—W. Columbia
VAN LOTT, INC.

SOUTH DAKOTA—Sioux Falls
SIOUX ROAD EQUIPMENT, INC.

TENNESSEE—Chattanooga
NIXON MACH & SUP. CO., INC.
Memphis
LEWIS-DIESEL ENGINE CO.

TEXAS—Corpus Christi, Dallas, Houston, McAllen, Wichita Falls
STEWART & STEVENSON SERVICES, INC.
El Paso
EQUIPMENT SUPPLY CO., INC.
Plainview
DIESEL POWER, INC.

UTAH—Salt Lake City
Cate Equipment Co., Inc.

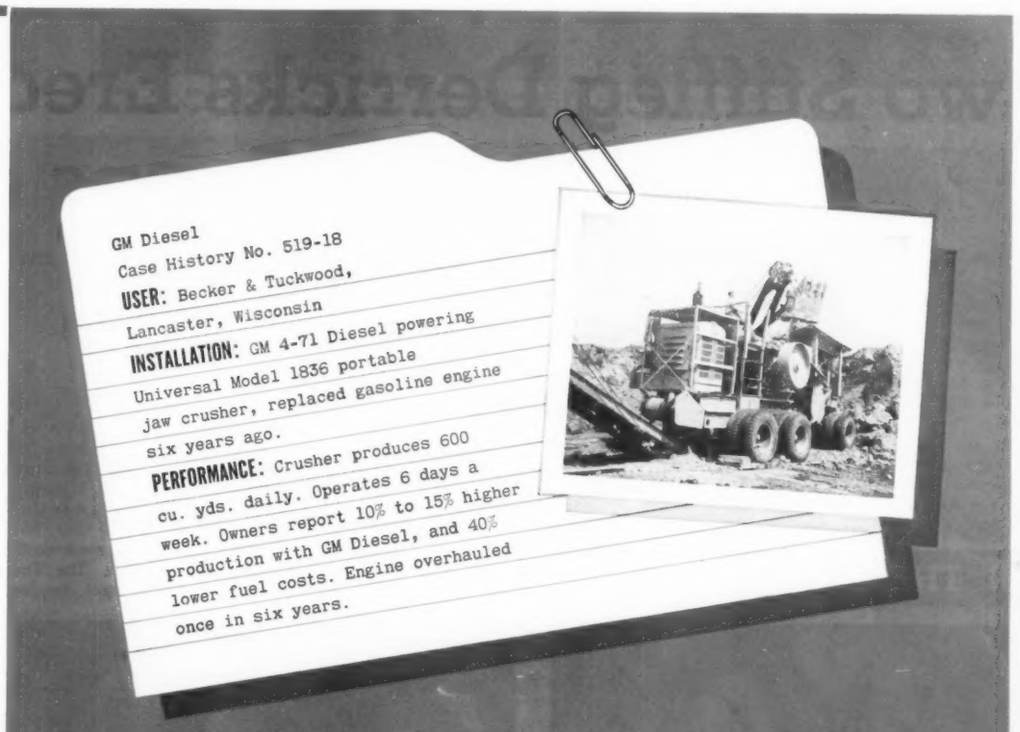
VERMONT—Barre
HILL-MARTIN CORPORATION

VIRGINIA—Richmond, Roanoke
BEMISS EQUIPMENT CORP.
West Norfolk
WESTERN BRANCH DIESEL SALES & SERVICE

WASHINGTON—Seattle
EVANS ENGINE & EQUIP. CO., INC
Seattle
YUKON EQUIPMENT CO., INC.
Spokane
MODERN MACHINERY CO., INC.

WISCONSIN—Milwaukee
DROTT TRACTOR CO., INC.

WYOMING—Casper
COLORADO BUILDERS' SUPPLY CO.
(Equip. Div.)


GM Diesel
Case History No. 519-18
USER: Becker & Tuckwood,
Lancaster, Wisconsin
INSTALLATION: GM 4-71 Diesel powering
Universal Model 1836 portable
jaw crusher, replaced gasoline engine
six years ago.
PERFORMANCE: Crusher produces 600
cu. yds. daily. Operates 6 days a
week. Owners report 10% to 15% higher
production with GM Diesel, and 40%
lower fuel costs. Engine overhauled
once in six years.

THIS DIESEL CRUSHES 600 YARDS A DAY
and cuts fuel costs 40%

The engine in this crusher started Becker and Tuckwood off with General Motors Diesel power in 1946. Now they have eight GM Diesels powering crushers, tractors, shovels and pulverizers. These 2-cycle engines pack more power in less space—provide the rugged, dependable, economical power needed for all kinds of applications from 32 H.P. up. Then too, maximum interchangeability of working parts cuts downtime—helps keep maintenance costs at a minimum. Why not ask your GM Diesel distributor for all the facts?

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS • DETROIT 28, MICHIGAN
SINGLE ENGINES . . 32 to 275 H. P. MULTIPLE UNITS . . Up to 800 H. P.

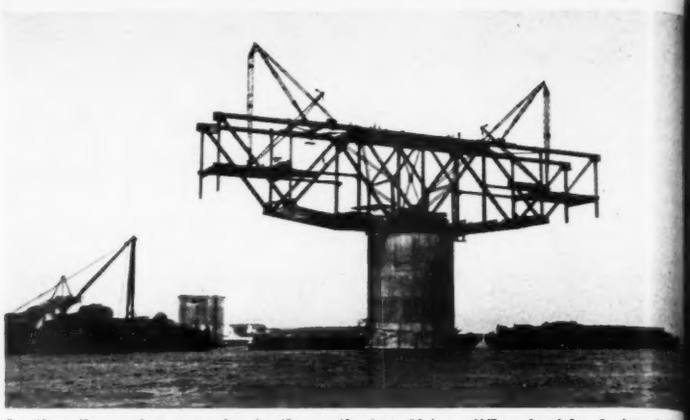
It pays to Standardize on

GM GENERAL MOTORS DIESEL POWER

Write for booklet, "A 50,000,000 Horsepower Insurance Policy" that tells you why.

ON THE JOB

Along about last June, the south swing-span pier for the George P. Coleman Memorial Bridge was nearing completion in the York River, Virginia.



On the other swing-span pier to the north, two 20-ton stiffleg derricks designed by the superstructure contractor, Virginia Bridge Co., were erecting steel.

Two Stiffleg Derricks Erect Big Swing Spans of Bridge

They Cantilever Out From Piers to Erect 500-Foot Swing Spans; Other River Spans Floated Into Place on Barges

By WILLIAM H. QUIRK,
Eastern Editor

(Photo on page 1)

• THE Virginia Bridge Co. of Roanoke, Va., employed three different methods of steel erection for the new highway bridge over the York River between Gloucester Point and Yorktown, Va. Approach girder spans were put up with a combination of traveling derricks "topside" and truck cranes on the ground. Two stiffleg derricks cantilevered out from the main piers to erect the unique pair of 500-foot central swing spans, largest of the type ever built. The other main river spans were assembled on falsework towers set up on barges, floated into position, and lowered to the pier tops.

Built by the Virginia Department of Highways at a total cost of around $8,000,000, the 3.750-foot bridge will be formally dedicated on May 7. It replaces the ferry that used to carry heavy north-south traffic on U. S. 17, the Coastal Highway, over the York River. The bridge was designed by the consulting engineering firm of Parsons, Brinckerhoff, Hall & Macdonald of New York City, which also supervised construction on the project.

Work on the project got under way in December, 1949, after a $4,690,232 joint-venture contract for the substructure was awarded to the Massman Construction Co. and the Kansas City Bridge Co., both of Kansas City, Mo. The massive foundations were completed in September, 1951. The Virginia Bridge Co. started steel erection under its $2,242,711 superstructure contract in October, 1950, following close behind the construction of the piers.

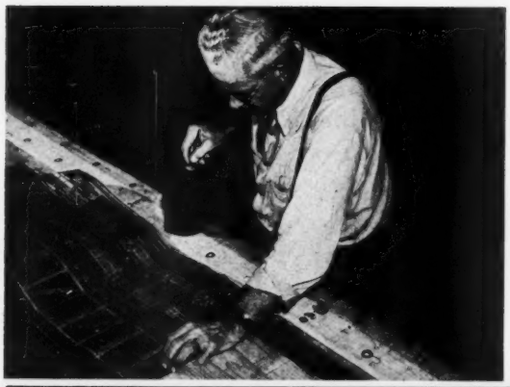
Unique Structure

A double-leaf swing-span design was chosen for the bridge because of objections to a high-level suspension span or a double-leaf bascule whose high framework would clash esthetically with the colonial atmosphere of historic Yorktown. The two 500-foot swing spans provide, when open, a clear 450-foot channel where the water is 80 feet deep. When the moving spans are closed, the vertical clearance is 60 feet. The main pier on the north side of the channel, supporting one of the 500-foot swing spans, is designated 1-N. Continuing north to Gloucester Point the remaining piers on that side are numbered in order to 11-N. The main pier on the south side of the channel, supporting the other 500-foot swing span, is 1-S. To the south or Yorktown side the piers are numbered up to 9-S. This does not include the abutments.

Over the river itself there is 2,540 feet of deck truss construction, symmetrical about the 500-foot channel span. The flanking spans back from the channel are 390, 350, and 280 feet respectively. Beyond the deck trusses on the north side are eight 90-foot approach girder spans. On the south side, six approach girder spans include four at

(Continued on next page)

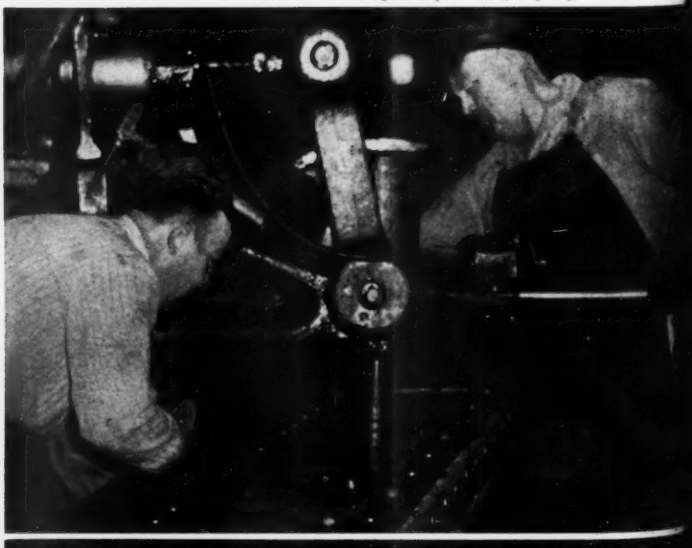
IN THE SHOP



Once plans were blueprinted in Virginia Bridge Co.'s Roanoke shops, wooden templates were marked to guide steel workers.

C. & E. M. and Virginia Department of Highways Photos

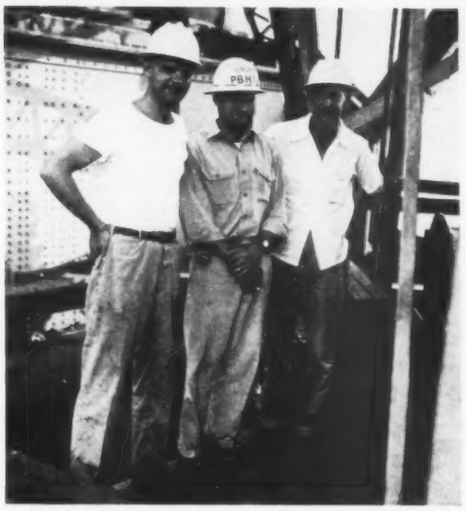
Bridge parts of all shapes and sizes had to be readied as the work progressed.



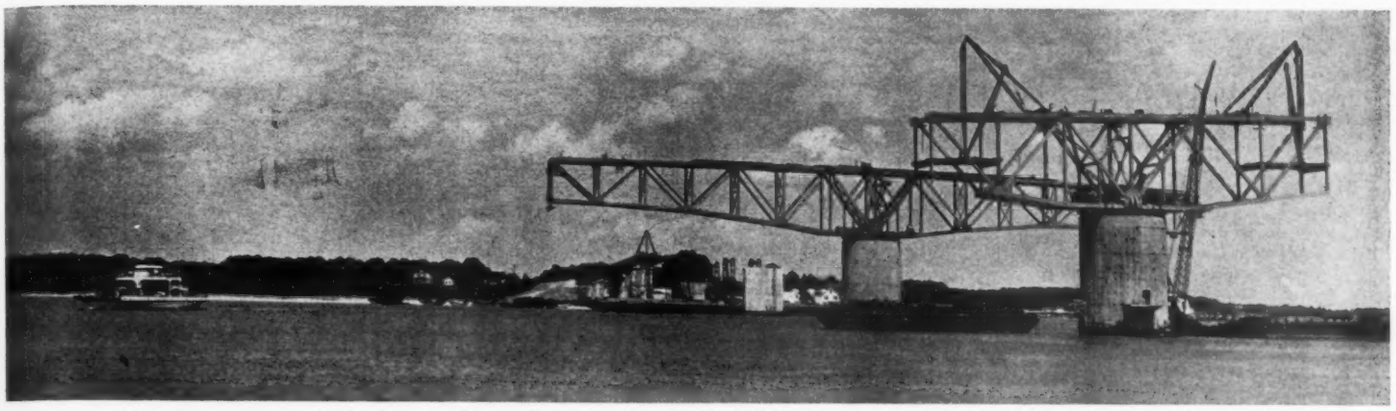
Here, in the shops, a hydraulic riveter is "buttoning" up a girder for the bridge.

The entire dead load of each 500-foot swing span is carried by a massive pivot bearing.

Here you are looking up into the pier 1-N truss toward a derrick. Note the pivot girder 10 feet deep.



Left to right are Whiteman and Stevenson, representing the consultants on the job, with Superintendent Penry.



By the end of last summer, steel erection had been completed on the north swing span and had begun on the south one. Open, the two spans provide a 450-foot channel

90 feet and two at 65 feet.

Bases for the six river piers (1-S, 2-S, 3-S, 1-N, 2-N, and 3-N) are caissons with heights varying up to 110 feet. They are 40 feet beneath the surface of the water and embedded as much as 70 feet below the river bottom. The sinking of these six steel shells was a distinct achievement in heavy construction. (See C&EMonthly, January, 1951, page 74.) At 1-N and 1-S the caissons are topped by cylindrical concrete piers on which the swing spans pivot. They are 44 feet in diameter and 99 feet high above the top of the caisson. Of this length 40 feet is under water Machinery for operating the swing spans is located on the bottom chords of the swing spans, directly over the piers, and electrical equipment is housed within the piers. The other four river piers, rectangular in shape, are from 32 to 44 feet in height above the water.

Girder Spans First

Structural steel for the superstructure, exclusive of machinery and the steel grid deck for the swing spans, totaled 5,438 tons. It was fabricated and assembled at U. S. Steel's Virginia Bridge Co. shops at Roanoke. All the steel for the approach spans, including the heavy 90-foot 19-ton girders, was shipped by rail to a Chesapeake & Ohio Railroad siding at Lee Hall, Va., on the peninsula formed by the York and the James Rivers. From there it was hauled 6 miles to the bridge site by J. W. Barton, a trucking contractor of Roslyn, Va. Members designated for the north approach were taken across the river on the ferry.

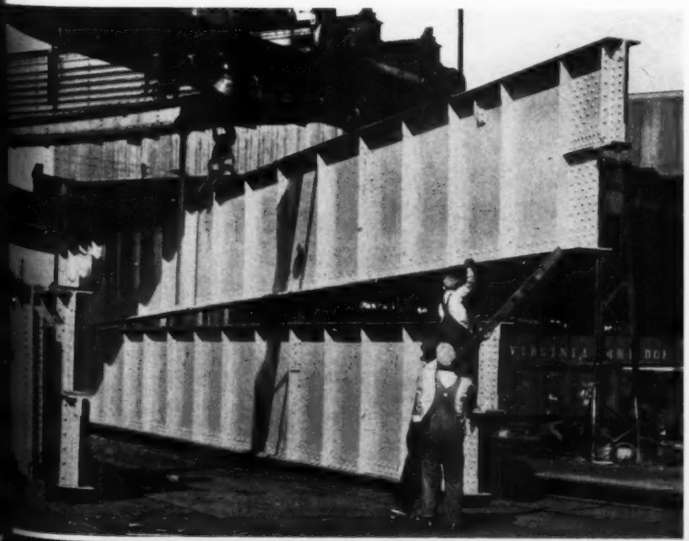
The six approach girder spans on the south side and the eight on the north were erected with a two-machine combination of traveling derrick and truck crane working together on each side. The travelers were Virginia Bridge 15-ton rigs, while the truck cranes were 20-ton machines equipped with 70-foot booms and 25-foot jibs; one was a P&H and the other a Browning. Together they raised and set the big girders, after which the travelers took over and filled in the bracing and floor system.

By the end of 1950 the girder spans were completed, and steel erection was suspended until May 15, 1951, while pier 1-N was being completed. Steel for the river spans was shipped via the Norfolk & Western railroad to Lambert's Point at Norfolk, Va., where it was unloaded from the cars by a 75-ton locomotive crane and placed on barges. Great care was taken in laying out the various members on the barges to correspond with a detailed loading list designating where each piece was to go. This expedited the lifting and placing when the barges were towed through Hampton Roads, Chesapeake Bay, and up the York River to mooring positions alongside the main piers. The one-way water tow was about 45 miles.

Giant Swing Spans

Steel for the 500-foot giant swing spans weighed 901 tons for the north span on pier 1-N, exclusive of bridge floor, and 926 tons for the south span on pier 1-S. The operator's house and structural framing carried by the south swing span account for its extra weight. Span 1-N was erected first. The initial

(Continued on next page)



Now two girders emerge from the shops, ready for delivery to the job. In all, Virginia Bridge Co. fabricated and assembled 5,438 tons of steel for the bridge superstructure.

C. & E. M. Photo

Here is an end view of cantilevering operations at pier 1-N.

Two Stiffleg Derricks Erect Spans of Bridge

(Continued from preceding page)

barge load of steel carried the heavy 10-foot-deep 32-ton pivot girder with the rack and track segments. Also on board was the massive pivot bearing which supports the pivot girder and carries the entire dead load of the span. This pivot bearing, on which the whole span balances, has a diameter of 84 inches at the base, 36¼ inches at the top, and is 40 inches in height above the concrete pier.

This steel was put up on top of the pier by two 30-ton derrick boats used by the substructure contractor. The first steel was erected with these floating rigs on June 1. The rack and track system was secured to the pier with 96 anchor bolts, 1½ inches in diameter x 3 feet long. Then on June 14 and 15 the floating rigs set up on the pier two Virginia Bridge Co. derricks, designed and built for their first use on this job.

They were 20-ton standard guy derricks, but with head pieces adaptable to stifflegs in place of spotters. Masts were 60 feet, booms 50 feet, and back legs 51 feet 8 inches long. The legs went back to cross sills on the top-chord members of the trusses, which are 28 feet 11 inches on centers. The derricks were operated by Clyde 3-drum hoists powered by Waukesha gas engines, and used ⅝-inch cable lines.

The long spans were erected with the arms up and downstream rather than across the river so as not to interfere with navigation in the channel. While the two forward arms over the channel are balanced by identical sections of the bridge itself, a true balance did not have to be maintained by the two derricks during the construction. Unbalanced loads in the ballast cantilevering erection procedure were made possible by two bolsters that securely anchored the span to the pier. Shop-welded together, the bolsters were made up of two 21-inch CB 127-pound sections, 31 feet 8 inches in length, welded together and topped by four cover plates 10 inches x ½ inch x 31 feet 7 inches long.

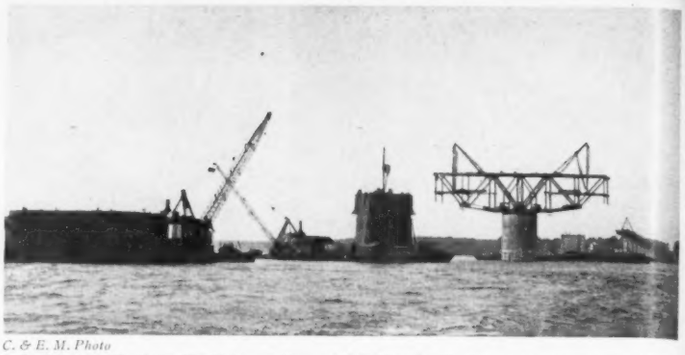
They rested on pedestal plates, carefully set on top of the pier. Tie-down rods, 2¾ inches in diameter, held the span to the bolsters, which were 34 feet 4 inches apart on centers. With this support the derricks worked out from the pier independently of each other, and if unbalanced loads developed up to certain limits there was no cause for concern. Span 1-S was erected following the completion of 1-N, and in the same manner.

Barge-Supported Falsework

The two river truss spans on the north side—350 and 280 feet long respectively—were erected on falsework towers set on floating barges, and later moved into position and lowered to the pier tops. The floor-framing system was not included in this preassembling process, but was later erected by derrick boats. The derrick boats also erected the 140-foot section of cantilever truss to complete the 390-foot span adjacent to the swings.

Two huge car floats, 40 feet wide x 260 feet long, served as barges. They were joined at the ends by struts that held them 70 feet apart. The steel falsework was raised to predetermined heights on each barge, and the truss erected across the tops. Cantilevering was continued beyond the falsework towers on each side, until the desired span length was obtained. The assembling of the trusses on the falsework towers was done with the barges positioned between the piers upon which the trusses would be finally landed. Temporary falsework was erected on pier 4-S to support the girder span until the adjoining truss span was set in place.

The towers were of silicon steel and fabricated into Virginia Bridge Co. standard 500-ton bents, rectangular in shape. The tower sections were fabricated in such a manner that they were easily adaptable to any heights within workable ranges. Struts and diagonals were designed for adjustments to the nearest ⅛ inch.



C. & E. M. Photo

Looking north along the Coleman Memorial Bridge in Virginia, we see the cofferdam for pier 2-S at left, then concrete placing on pier 1-S, and finally steel erection in progress on pier 1-N.

Main steel erection was handled by two floating derricks rented from the substructure contractor. For filling-in purposes, one of Virginia Bridge Co.'s floating rigs was used; it consisted of

(Concluded on next page)

Mobile CONCRETE MIX PLANT

21-FOOT discharge

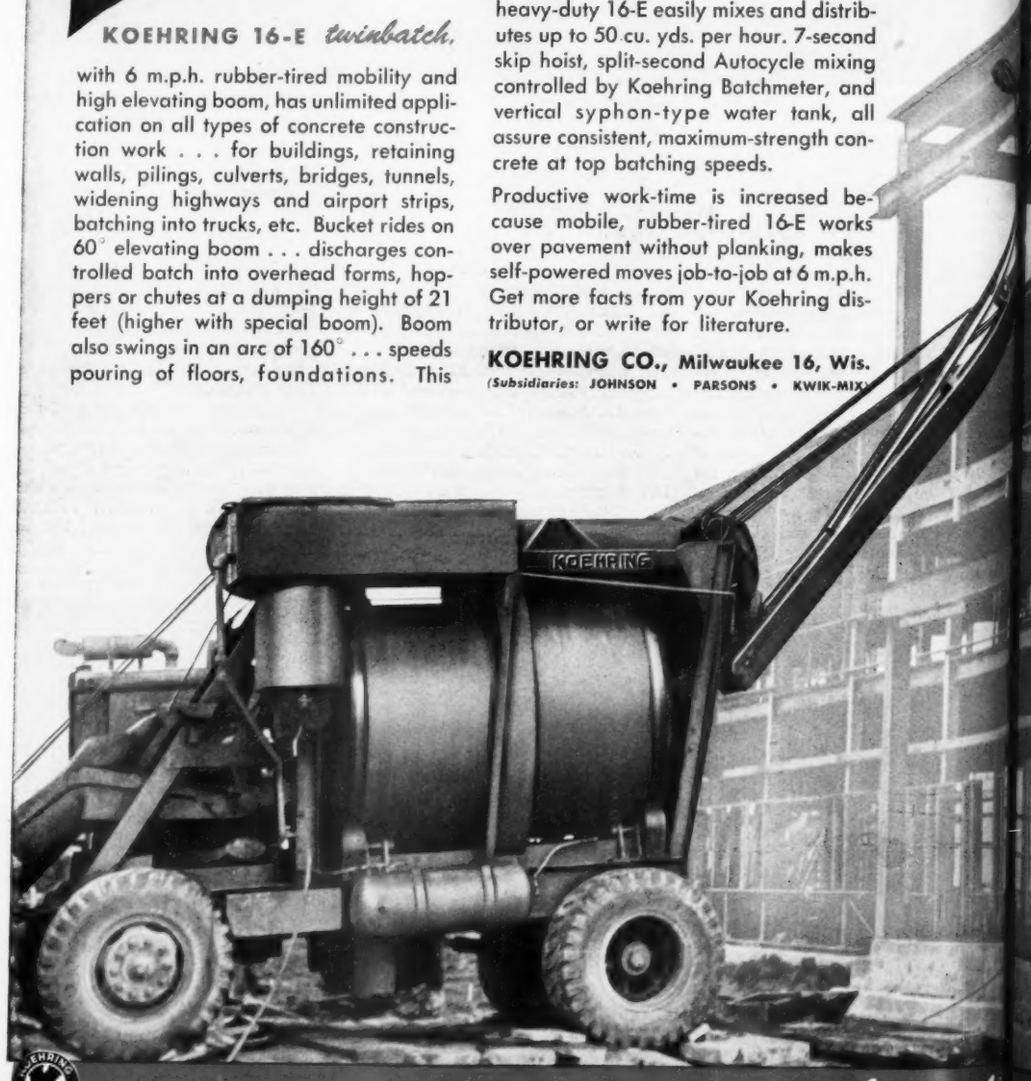
(HIGHER WITH SPECIAL BOOM)

KOEHRING 16-E *twinbatch,* with 6 m.p.h. rubber-tired mobility and high elevating boom, has unlimited application on all types of concrete construction work . . . for buildings, retaining walls, pilings, culverts, bridges, tunnels, widening highways and airport strips, batching into trucks, etc. Bucket rides on 60° elevating boom . . . discharges controlled batch into overhead forms, hoppers or chutes at a dumping height of 21 feet (higher with special boom). Boom also swings in an arc of 160° . . . speeds pouring of floors, foundations. This heavy-duty 16-E easily mixes and distributes up to 50 cu. yds. per hour. 7-second skip hoist, split-second Autocycle mixing controlled by Koehring Batchmeter, and vertical syphon-type water tank, all assure consistent, maximum-strength concrete at top batching speeds.

Productive work-time is increased because mobile, rubber-tired 16-E works over pavement without planking, makes self-powered moves job-to-job at 6 m.p.h. Get more facts from your Koehring distributor, or write for literature.

KOEHRING CO., Milwaukee 16, Wis.

(Subsidiaries: JOHNSON • PARSONS • KWIK-MIX)



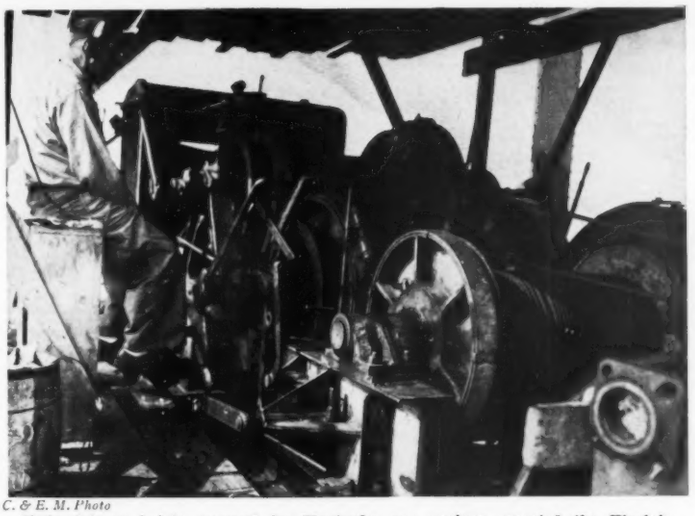
KOEHRING 16-E *twinbatch*

PAVERS • FINISHERS • CONSTRUCTION MIXERS • CRANES • EXCAVATORS • DUMPSTERS • MIX-MIX

a 25-ton stiffleg derrick with a 40-foot mast and a 100-foot boom, and was mounted on a steel barge. The falsework for the barges was assembled at Lambert's Point, Norfolk, and the erection of the falsework towers and trusses for span 2-N got under way at the bridge site in August. The suspended, cantilever, and anchor spans on the north side were completed first, to be followed by the trusses on the south side of the bridge.

Floating Them In

The two 40-foot-wide barges, fixed 70 feet apart, were positioned transversely to the bridge center line, between the piers that would subsequently receive the span. The barge assembly was anchored upstream and downstream, making use of four 12-ton anchors, two per barge. With the barges in this temporary position, a 150-foot section of the span was erected, supported at certain panel points by the falsework towers. The remainder of the span length was cantilevered out from both ends of the supported midsection over the sides of the barge assembly. The barges were held in fixed position during erection of the span, which was accomplished using the aforementioned derrick boats.



C. & E. M. Photo

Clyde 3-drum hoists powered by Waukesha gas engines operated the Virginia Bridge Co. derricks which erected the bridge spans over the York River.

When the trusses were assembled for the full span length, the barges were moved to the landing position, midway of the span. Horizontal movement of the barge assembly was controlled upstream and downstream by manipulation of the anchor lines; motion along the bridge center lines was controlled by cables leading from five No. 99 round winches, positioned at the ends of the barges, to previously embedded metal anchor points in the pier shaft. Vertical motion of the span during landing of the pier tops was accomplished by making use of the ebb tide, pumping water into the barges, and making final adjustments by using 8 Watson-Stillman 100-ton hydraulic jacks rigged in tandem and placed beneath the tower legs, 4 to a tower.

Four truss spans were placed in this manner. First the long truss span, 2-N to 3-N, was placed upon the piers; the cantilever at both ends of this span was added; and finally the suspended span between piers 3-N and 4-N was connected, all on the north side of the river. The same procedure was used in setting the two south truss spans. All steel came with one shop coat of red-lead paint, and after erection received two field coats of aluminum paint. The structure contains 138,408 rivets, ⅞-inch size, which were driven by Thor 93 riveting hammers. Air was supplied by two Ingersoll-Rand 210-cfm compressors.

The two 500-foot swing spans have Carnegie-Illinois I-Beam-Lok floor decking, while the rest of the bridge has a 26-foot reinforced-concrete paving slab. Paving was done by the W. F. Magann Corp. of Portsmouth, Va., under a subcontract.

Personnel

The Virginia Bridge Co. employed an average force of 40 on the project under the direction of John Penry, Superintendent. The contractor had two work boats in service for transporting men and material back and forth—the 34-foot Rachel, powered by a Gray Marine 165-hp diesel engine; and a former Navy personnel barge, driven by a Hall-Scott 250-hp marine engine.

Roger Stevenson was Resident Engineer, with Joe Whiteman Assistant Resident Engineer, for the consultant—Parsons, Brinckerhoff, Hall & Macdonald.

For the Virginia Department of Highways, C. S. Mullen is Chief Engineer, and William R. Glidden is Bridge Engineer. The new span is called the George P. Coleman Memorial Bridge.

height

CONTROLLED-DISCHARGE BUCKET

has clamshell-type door, hydraulically controlled . . . can be opened or closed at any time for gradual discharge. 24 cu. ft. water-level capacity is more than ample for the full 16 cu. ft. concrete batch, plus 10% overload.

BOOM SWINGS IN 160° ARC...

. . . double-channel distributing boom on the Koehring 16-E *twinbatch* is power controlled . . . swings in a 160° arc, elevates 60° . . . is self-locking and holds securely in any position for accurate spotting and discharge.

SET-UP FOR CENTRAL-MIX

Producing concrete for factory floors and footings on a building construction job (below), a Johnson Lo-Bin® Trolley Batcher weighed the materials . . . Koehring 16-E *twinbatch* handled all mixing, and discharged concrete into overhead storage hopper . . . Kwik-Mix 10 cu. ft. Moto-Bug® power wheelbarrows hauled and poured the concrete into building forms.

Ask, too, about production advantages of big 34-E *twinbatch* and Longitudinal Finisher for highway, airport, other major paving jobs.

Water Repellent

A silicone-base water repellent for exterior masonry surfaces is announced by Speco, Inc., 7308 Associate Ave., Cleveland 9, Ohio. Dam-Tite is a colorless liquid which is said to penetrate masonry surfaces up to ⅜ inch, waterproofing the pore walls without plugging them or preventing air passage. It can be sprayed or brushed on brick, concrete, stucco, stone, unglazed tile, or asbestos-shingle surfaces. It has no effect upon the appearance or texture of these surfaces.

Dam-Tite is designed to keep damaging moisture from reaching interior walls and at the same time prevent exterior chipping, cracking, and frost damage. It prevents oxidation and, because it repels water, it also sheds the dirt and stains that water normally carries into masonry surfaces, Speco says.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 769.

A Huge Steel Dome On Arc-Welded Ribs

What has been called the world's largest all-steel shallow-type dome posed many construction problems which were answered by arc welding. The dome—part of the Jordan Marsh store in the new Framingham shopping center near Boston, Mass.—is 225 feet in diameter and is formed by 36 welded steel ribs, 110 feet long.

A. O. Wilson Structural Co. of Cambridge, Mass., fabricated the ribs, using more than 4 tons of General Electric electrodes (types W-22, W-24, W-26, W-27). Ring girders, 36 inches deep and weighing 300 pounds per foot, around the base of the building support the huge steel ribs, which meet in a 14-foot hub. Since the 30-inch girders for the ribs could not be bent to match the contours of the dome, each girder had to be cut into five sections, beveled at the ends, and were then welded together with G-E 200-amp welders.

Arc welding solved some tricky problems in the erection of the 225-foot-diameter all-steel dome for the Jordan Marsh store at Framingham, near Boston, Mass.

To raise the ribs and weld them to the hub, A. O. Wilson erected a 60-foot tower; and since available room for the welding operators decreased toward the center of the hub, a plywood floor piece was fitted between the rings to support the men. Using three G-E 300-amp gasoline-engine-driven welders, the men welded circular plates around the hub above and below. Then they welded 36 webs to the hub to connect it to the ribs.

A. O. Wilson erected the steel framework for the dome in 12 weeks.

New Book Discusses Basic Data-Handling Techniques

Two useful techniques for handling experimental and operational data are presented in a new book entitled "Nomography and Empirical Equations". Written by Lee H. Johnson, Dean of the College of Engineering, Tulane University, the 150-page book explains nomographs, which provide quick graphical answers where numerical data are substituted for formulas, and empirical equations, which are mathematical expressions of data plotted in the form of curves.

The author shows how to apply nomography to a wide variety of problems both in and out of the scientific field. Problems with answers are given at the end of each chapter to test the student's mastery of the topic.

The author says, "The principal advantage of a nomograph is in saving . . . time by providing a simple graphical solution which requires only a matter of seconds to perform. Another advantage is that the nomograph can be easily used by one who is unskilled in mathematics, something which is not true of calculations in general."

The price of the book is $3.75. It can be purchased from John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

Concrete-Pipe Coating

A 4-page bulletin on Rexon coating No. 2 for protecting concrete pipe against acids, alkalies, oils, and solvents is offered by Hamilton Kent Mfg. Co., 218 Gougler Ave., Kent, Ohio. It includes details on the characteristics of the coating, its working properties, and methods of applications. Photos and tables are numerous.

This literature may be obtained from the company by requesting Bulletin R-2, or by using the Request Card at page 16. Circle No. 788.

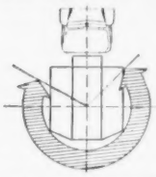
Marquette Has N. Y. Service

Word reaches us of a new service to jobbers in the New York area on the part of Marquette Mfg., Inc., Minneapolis, Minn., manufacturer of arc and gas-welding and automotive service equipment. The company has opened a new warehouse at 48-14 36th St., Long Island City 1, N. Y. The warehouse, which makes immediately available all Marquette products, is in charge of R. W. Massey, Field Engineer, and F. H. Eckman, Eastern District Manager. Marquette has opened similar warehouses in Los Angeles and Oakland, Calif.

solve more HOLE DRILLING PROBLEMS WITH BUDA EARTH DRILLS AND ACCESSORIES

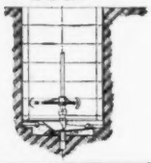
NEW! QUICK, EASY LOCATION

Turntable mounting of Earth Drill permits drilling at any point in 270° arc around the unit.



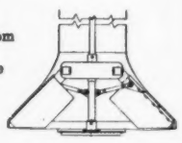
NEW! HOLE PROTECTION IN UNSTABLE SOIL

Helix and Caisson Undercutter Combination permits drilling and casing hole in 1 operation



NEW! DRILL FOUNDATION PIERS

Belling Tool enlarges bottom of bored hole to assure more bearing area and positive anchorage of concrete

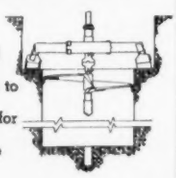


NEW! FASTER, EASIER SOIL SAMPLING

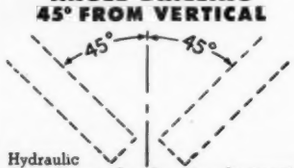
Permits procurement of uncontaminated samples with minimum amount of disturbance to depths of 100 ft.

NEW! DRILL LARGER ACCESS HOLES

Reaming Tool enables standard Earth Drill to enlarge hole up to 60" dia.— eliminates need for specially built, heavy, expensive equipment



ANGLE DRILLING 45° FROM VERTICAL



Hydraulic Controls provide adequate adjustment to vertical in difficult terrain and ability to dig angle or anchor holes.

Write for Bulletins giving diameter, depth and type of work for which equipment is needed. The Buda Company, Harvey, Illinois

BD-9

Nation-Wide Service BUDA

Write for name of your nearby Buda Earth Drill Distributor

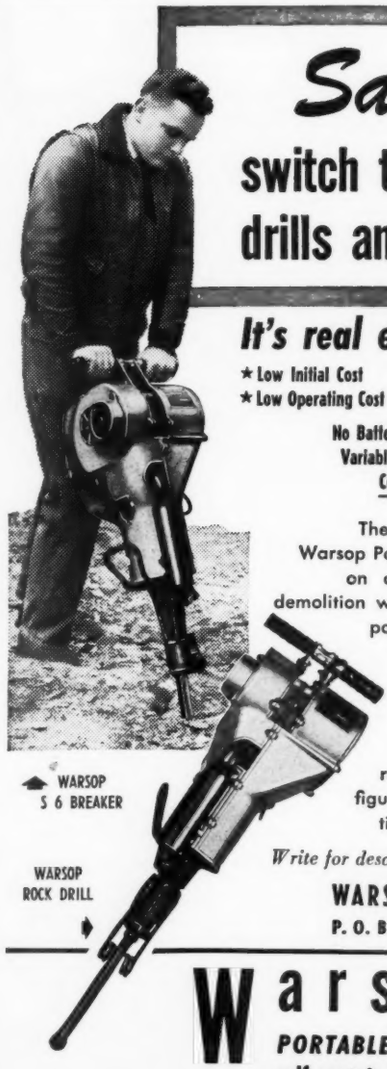
THE BUDA COMPANY

HARVEY · ILLINOIS

COAST TO COAST

Save...

switch to WARSOP drills and breakers



It's real economy

★ Low Initial Cost ★ Low Maintenance Cost
★ Low Operating Cost ★ Low Transportation Cost

No Battery • Positive Dual-Fan Cooling
Variable Speed Control • No Springs
Completely Self-Contained

There's real Savings when you use Warsop Portable Rock Drills and Breakers on all types of construction and demolition work. With Warsop hard-hitting power tools you need no cables, no hose. Compact and light in weight, they are easily transported from job-to-job. Wherever you have breaking or drilling jobs that require only one or two machines figure to use WARSOP. You'll save time, labor and equipment costs.

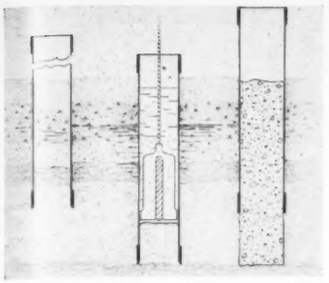
Write for descriptive folders and specifications.

WARSOP POWER TOOLS, Inc.
P. O. BOX 1809, WILMINGTON 99, DEL.

Warsop

PORTABLE DRILLS—BREAKERS

self-contained—gasoline engine driven



To drive the concrete caisson piles, Western Foundation Corp. sank a heavy steel casing to rock. Boulders were broken by a churn drill and materials removed by sand pumps, bailers, etc. Inspection followed: then, when cleaned, the casing was filled with concrete (in the dry or by tremie) and afterwards withdrawn.

All-Concrete Piles For Bad Subsurface

When driving the pile foundations for the warehouse and the first section of the D Annex Building of the Westinghouse Electric Co. plant in East Pittsburgh, Pa., Western Foundation Corp., New York, N. Y., came up against a difficult situation. In addition to the steel shortage, the subsurface conditions created a problem. Western found that the clay which extended from below the fill to just above the rock was interspersed with layers of soft shale, and a water-bearing sand-gravel layer directly overlying the rock made it unsuitable for the standard types of open caissons.

In cooperation with Stone & Webster engineers, Western solved this one (and incidentally saved a large amount of steel) by using its own all-concrete caisson piles. Designed for capacities up to 450 tons each, 191 of these concrete caisson piles completed the first portion of the job; and when the superstructure is finished, Western will install similar foundations for the second section of the annex building. The accompanying picture shows how the caisson piles were constructed. As they rest on the shale bedrock, any possibility of future settlement is eliminated.

Single Swivel Nozzle

A ¾-inch single swivel nozzle for roadside spraying is made by Spraying Systems Co., 3201 W. Randolph St., Bellwood, Ill. Built with an off-center orifice tip, it will produce a spray from 15 to 30 feet wide, depending upon nozzle size, line pressure, and elevation of the unit.

The TOC model is made of brass and is supplied in various tip sizes. The company points out that these units are particularly useful for spraying inaccessible areas.

Further information may be secured from the company. Or use the Request Card bound in at page 16. Circle No. 789.

For maximum coverage the TOC single swivel nozzle is set so the upper leading edge of the spray makes a 30-degree angle with the horizontal.

Catalog on Small Tractor

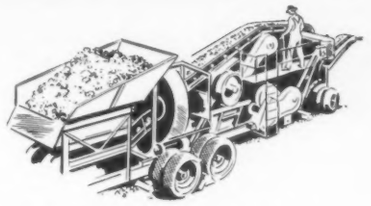
A 32-page catalog on the Caterpillar D2 tractor is available. It illustrates the unit's job applications and gives detailed specifications. The D2 has 32 drawbar hp and a 7,550-pound drawbar pull. It has five forward speeds and weighs 6,710 pounds.

This literature may be obtained from Caterpillar Tractor Co., Peoria 8, Ill., or by using the Request Card at page 16. Circle No. 706.

Heacock Is B-G Chief Engr.

Barber-Greene Co., Aurora, Ill., manufacturer of mixers, loaders, ditchers, conveyors, and other road machinery, recently promoted Roy C. Heacock to be Chief Engineer in charge of development and engineering phases of the company's activities. Mr. Heacock has been with Barber-Greene six years. Prior to his present appointment, he was the company's Executive Engineer of Engineering Development.

for rugged jobs...

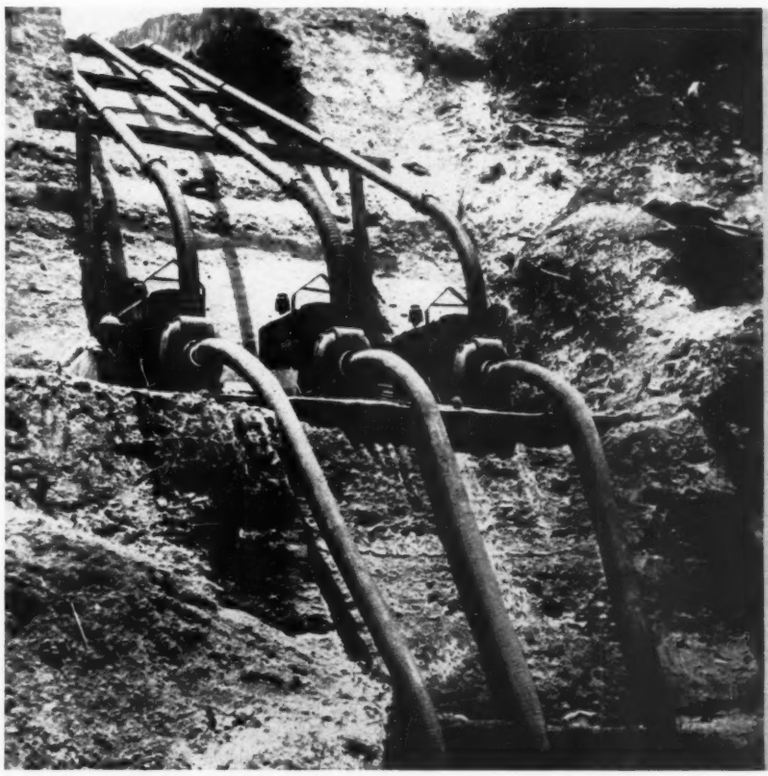


Torrington Spherical Roller Bearings are self-aligning. They easily handle the heavy shock loads of rugged construction work.

These heavy-duty bearings are made of the finest materials, to precision tolerances. They are ideal bearings for all types of construction machinery.

THE TORRINGTON COMPANY
South Bend 21, Indiana Torrington, Conn.
District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON SPHERICAL ROLLER BEARINGS
Spherical Roller • Tapered Roller • Straight Roller • Needle • Ball • Needle Rollers



Taking it on the chin—without grunting or groaning. Here are Barnes Pumps working a really tough job in South America. With overhaul shops hundreds of miles from the job, the contractor had to have pumps that would stay on the job without "time out" for repairs. That's where Barnes Pumps outshine all others.

BARNES "33,000 FOR 1" PUMPS NOT ONLY "TAKE IT" BUT KEEP DISHING IT OUT ON THE TOUGH JOBS!

Got a tough pumping job? Give it to Barnes Automatic Centrifugals and watch 'em walk off with the load! Watch them "put out" day in and day out—year after year. Watch them pump 33,000 gallons of water on each gallon of gas! Watch how they stand up without overhaul! Then you will see why Barnes Self Primers are first in the minds of construction men who want the best in pumps.

The Barnes Line is complete—with capacities ranging from 4,000 to 90,000 G. P. H.—with choice of either Electric, Diesel, Gasoline, or Pulley Drive.

FOUNDED 1895 Barnes MANUFACTURING CO. MANSFIELD, OHIO

BUY THE BEST • • • BUY BARNES

Contractors Get Hope On Materials Problem

Federal Spokesmen at AGC Convention in Detroit Hint at More Favorable Situation; Controls Limit 1952 Construction

• WHILE Federal controls of materials will hold the volume of construction this year below the record $39 billion of 1951, a more favorable outlook is expected for the industry in general during the third and fourth quarters of 1952. Such was the hope expressed by Government officials to the 33rd Annual Convention of The Associated General Contractors of America held in Detroit, Mich., February 25-28. With the greatest amount of Government controls since World War II now in effect, the remarks of the Federal spokesmen were received with interest by the 980 delegates representing the AGC membership of 6,105 leading construction firms throughout the country.

Admitting "substantial unemployment in certain areas in the building trades", Frank R. Creedon, Assistant Administrator for Facilities and Construction, National Production Authority, told the meeting that from now on commercial construction is going to get more favorable consideration in the distribution of critical materials. Creedon called attention to NPA's recent approval of 645 new projects totaling over $200 million, mostly religious and municipal buildings, that have been assured of materials in the third quarter and can go ahead with preparatory work now. He also cited a backlog of $800 million worth of commercial construction, involving 1,100 jobs now awaiting authorization, that will give work to many contractors. Creedon compared the 70,000 tons of steel required for this commercial backlog with the "165,000 tons of structural steel needed for a new big steel plant being built in New Jersey at a cost of approximately $400 million". (Fairless Steel Works at Morrisville, Pa., across the Delaware from Trenton, N. J.)

According to the Government administrator, the NPA will grant no new starts in industrial construction in the second quarter "unless endorsed by the military as being urgently necessary". Otherwise the backlog of industrial construction will be handled as the commercial construction is now—"perhaps in the third quarter but with a substantial number in the fourth quarter". Creedon stated that the Bureau of Public Roads has asked for three times as much steel in the third quarter as it got in the second quarter, but conceded that highways are a good contender for more steel because they do not require other scarce material. At the proper time Creedon said he hoped to recommend "appropriate major relaxation of controls and regulations on materials, provided the international picture does not change."

Predicts Good Year

Another Washington spokesman—John L. Haynes, Director of the Building Materials Division, NPA—predicted a good year for the construction industry. Despite continued declines in residential, and the low level of commercial building as well as of some deferrable public works, Haynes felt this would be nearly offset by increases in military, industrial, and electric-power projects. He estimated that 800,000 new private homes will be built this year, representing a decline from the 1950 and 1951 record totals.

Getting specific as to materials, Haynes admitted that it is going to take "some very good judgment on the part of the Defense Production Administration to see that steel, copper, and aluminum are channeled into the right places." While nonmetallic materials are in good supply, there is a continued scarcity of metals, especially wide-flange structural-steel shapes and plate. Haynes declared that the real limiting factor on construction activity is likely to be the unavailability of copper, but that this will be alleviated to some extent where galvanized pipe can be substituted for copper tubing.

Ceiling Price Regulation 93, its theory and history, was explained to the contractor group by Thomas G. Letchworth, Chief, Construction Section, Building Materials Branch, Office of Price Stabilization. The base period of a year—July 1, 1949, through June 24, 1950—was chosen in order to provide for seasonal variation. In determining the highest prices charged during the base period, the contractor is not compelled under this regulation to select a contract wherein he was necessarily the successful bidder. CPR 93 permits the seller of a construction service to apply to his current cost of labor, materials, and equipment, 9/10 of the highest markup for profit that he had in effect in the base period for a comparable job or sale. While it does not control the final or end price, the regulation does govern the markup for profit over current costs for labor and material.

Annual Report

In his annual report, Herbert E. Foreman, Managing Director of the AGC, declared that the NPA and other mobilization agencies have brought construction activity almost completely under Government control during the past year. Construction activity has tended to become spotty, with a large amount of work in some areas and a falling-off in others. Foreman urged sound advance planning of the increasing backlog of needed construction so that this work can be started promptly when materials are available and controls are relaxed. Construction in 1952 is expected to be from 5 to 10 per cent below the record-breaking total of last year when it was the nation's most productive single industry.

Other speakers that followed Foreman at the opening general convention session criticized Government controls.

(Continued on next page)

When the pressure's on ...

that Pioneer Edge

PIONEER ASPHALT PLANT DELIVERS UP TO 600 EXTRA TONS PER DAY UNDER UNUSUALLY DIFFICULT CONDITIONS
EXTRA production can be taken for granted with PIONEER equipment on the job.
Operating out of Memphis, for example, a PIONEER Model 101 CONTINUFLO Bituminous Plant rated at 110-135 tons per hour capacity has been setting new records on a Mississippi River erosion control project.
"We've sometimes averaged 175 tons per hour for a 12-hour day," reports Sam Finley, Inc., of Atlanta, the contractor, "but we're usually satisfied with 1800 tons during a 12-hour day."
The Sam Finley Corporation's job is to lay 5" of uncompacted asphalt from near the water's surface up and over the bank which has been graded to a 3 to 1 slope. Materials are sand with 6% asphalt added. The sand, with 10-15% moisture content, is obtained from nearby bars in the river and delivered by barge, from which it is loaded directly into the drier hoppers. Operating 4 or 5 months per year, with two driers in tandem, the plant has produced about 300,000 tons in the two years since its installation . . . another instance where PIONEER's extra capacity, coupled with built-in ruggedness and stamina have meant *extra* production to a good operator.

BUY BOTH!
HIGHER OUTPUT
LOWER UPKEEP

Pioneer *Continuflo* **EQUIPMENT**

D. A. Hulcy, President, Chamber of Commerce of the United States, and President, Lone Star Gas Co., Dallas, Texas, stated that "if the American economy ever has another big bust, it will be the result of too much government, and not less government." He expressed a wish that the American people would realize that active construction markets, next to agriculture, are the most important single factor in maintaining a strong civilian economy.

A. van der Zee, Chrysler Corp. Vice President in Charge of Sales, warned of the tendency to perpetuate emergency or so-called temporary controls. He called attention to the estimate of highway experts that about half our main roads will wear out during the next ten years, and that many of them are now functionally obsolete. "Yet steel allocations to highway projects", van der Zee declared, "have been cut back from the estimated annual requirement of 2,000,000 tons to 800,000 tons."

Army and Navy Programs

"Only four of the 1,555 current continental construction contracts awarded by the Bureau of Yards and Docks are cost-plus-fixed-fee," stated Rear Admiral Joseph F. Jelley, Chief of the Bureau, Department of the Navy. Emphasizing that economy will continue to be the Navy's watchword in stretching its appropriations for vitally needed shore structures, Admiral Jelley predicted few negotiated contracts for 1952. He also informed the contractors that the Navy is considering keeping contracts from getting too large, as bidding drops off sharply when jobs go above $1,000,000 to $2,900,000. Having several projects instead of one big one will increase the Navy's administration burden, but it will result in more adequate competition, according to Jelley.

AGC officialdom, left to right: incoming Vice President C. P. Street, McDevitt & Street Co., Charlotte, N. C.; incoming President Arthur S. Horner, A. S. Horner Construction Co., Denver, Colo.; and retiring President Glen W. Maxon, Maxon Construction Co., Inc., Dayton Ohio.

The Yards and Docks chief mentioned that the Navy is using local contractors in Japan, also under competitive bidding, and noted two general differences between American and Japanese contractors. At a letting in Japan, once the bids are made public, the contractors willingly compare unit prices on the various items, a custom not usually practiced here; also, there are no performance bonds in Japan. If a Japanese contractor should be unable to finish a job, he would rather commit suicide than lose face by his failure.

Lt. General Lewis A. Pick, Chief of Engineers, Department of the Army, discussed the military construction program for the Army and the Air Force. The program will cost $3 billion, said the general, and is a construction mission that will encircle the globe. The Corps of Engineers has been called upon to handle about $820,000,000 for Army construction, and about $1,650,000,000 for the Air Force. "Except for overseas construction projects where the risk is an unknown quantity," General Pick pointed out, "the Corps of Engineers will generally avoid awarding the cost-plus-a-fixed-fee contract." In addition to many foreign countries, the vast program touches nearly every state in the Union, as well as Alaska, Hawaii, Puerto Rico, and the Panama Canal Zone.

Division Meetings

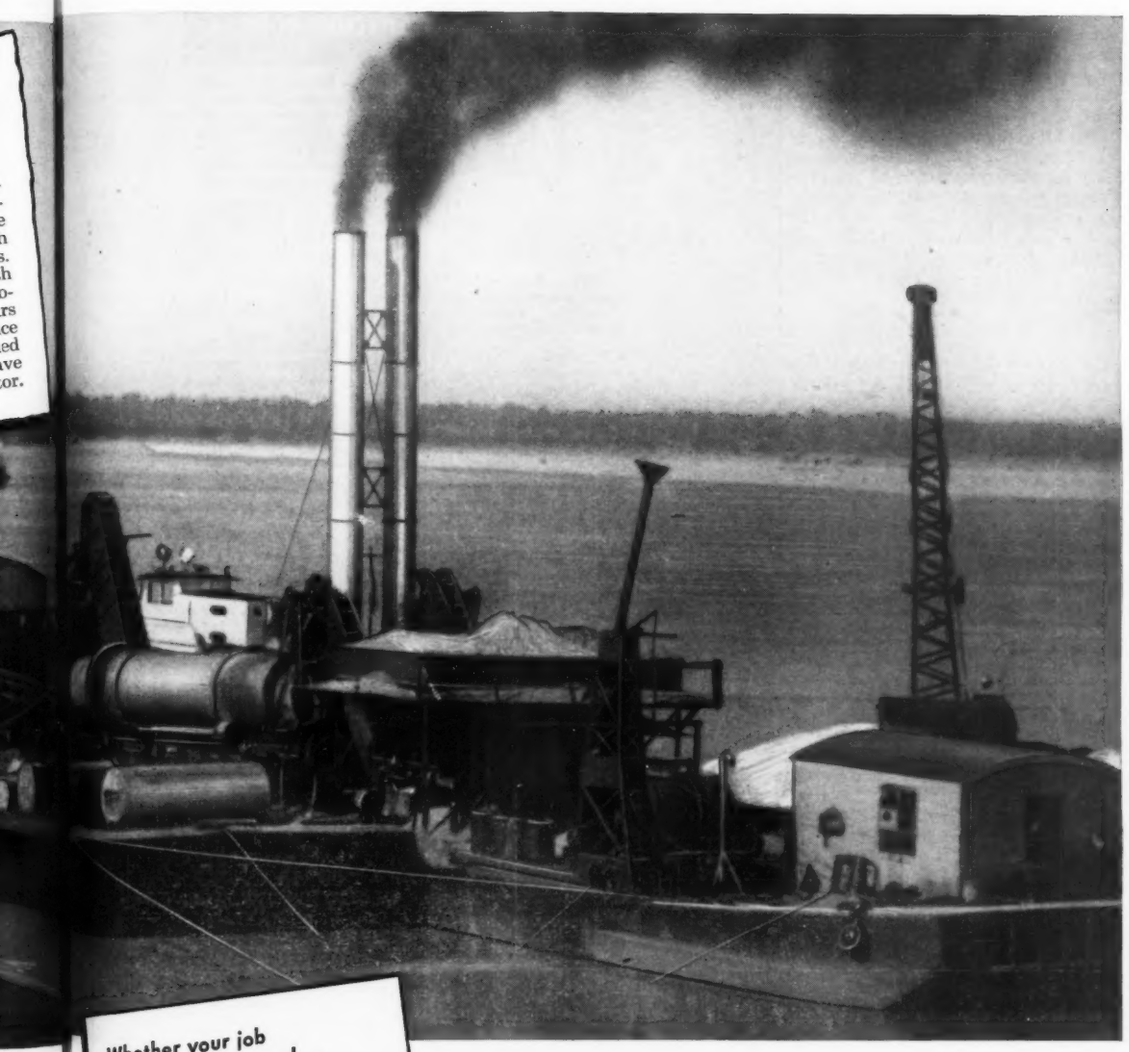
Two afternoons of the four-day convention were given over to separate meetings of the three main divisions of the association. At the initial gathering of the building contractors, Welton A. Snow, Division Manager, stated in his staff report that the market for building contractors this year will be "spotty". According to Government figures, the estimated dollar volume of principal types of building construction in 1952 will be around $15,160,000,000 as compared with $17,967,000,000 in 1951, or a decrease of 15.5 per cent. The biggest drop is expected in commercial construction.

Archie N. Carter, Division Manager of the highway contractors, presented Bureau of Public Roads statistics indicating that in 1951 a total of $1,515,000,000 was spent on roads by Federal, state, county, and city agencies. This represented a drop from 1950. The limited allotments of steel to highways is seriously delaying the road construction program. Diversion of highway funds to other than highway improvement totaled $217 million in 1950, the last year for which figures are available. This was the highest total amount on record, and was 8 per cent of the receipts available for highways. From 1924 through 1950, total diversion was over $3 billion. Carter also reported that unless the Congress provides increased Federal aid, the construction program for airports will not be large this year.

A. C. Clark, Deputy Commissioner for Construction and Maintenance, Bureau of Public Roads, informed the highway division that contractors on projects requiring 25 tons of steel or

(Concluded on next page)

delivers the goods



Whether your job is routine or unusual...

BEFORE YOU BUY... CHECK Pioneer!

"We thought a continuous mix plant would be more suitable than a batch-type plant," explains the Finley Corporation. "After looking at various makes it was our opinion that PIONEER built the best plant available. If it should be necessary for us to buy another plant of this kind, we'd unhesitatingly select PIONEER."

PIONEER ENGINEERING WORKS
1515 Central Avenue • Minneapolis 13, Minnesota
(SUBSIDIARY OF POOR & COMPANY • CHICAGO)

● Please send me information on the equipment checked.

☐ BITUMINOUS PLANTS	☐ ROLL CRUSHERS	☐ MECHANICAL FEEDERS
☐ GRAVEL PLANTS	☐ WASHING PLANTS	☐ VIBRATING SCREENS
☐ ROCK PLANTS	☐ APRON FEEDERS	☐ BUZZER SCREENS (LIGHT DUTY)
☐ JAW CRUSHERS	☐ ORO FEEDERS	☐ CONTINUFLO CONVEYORS

*Name*_____
*Company*_____
*Address*_____
*City*_____ *Zone*____ *State*_____

Contractors Get Hope On Materials Problem

(Continued from preceding page)

less will soon be permitted to self-certify their orders for this material. The elimination of the time-consuming paper work involved in obtaining the relatively small amount of steel will be a substantial saving to all concerned.

In the heavy construction and railroad contractors' division, J. D. Marshall, Division Manager, reported that about $8 billion of new construction in 1951 was in the heavy and railroad category. No decrease is expected this year since declines in civilian work are largely offset by defense construction.

Voice of Labor

Labor's voice at the convention was heard in an address to the general session by Richard J. Gray, President, Building and Construction Trades Department, American Federation of Labor, Washington, D. C. Gray criticized the lawyers and economists in the National Production Authority and the Defense Production Administration as being unfamiliar with the problems of the building and construction industry, and not qualified to set up allocations under the Controlled Materials Plan. The A. F. of L. spokesman said that he could cite literally "thousands of instances where our requests, recommendations, protests, and pleas have been brushed aside and ignored by Government officials, and by we I mean both labor and management."

Gray urged the AGC "to take the lead in uniting all segments of our building and construction industry so that when we speak we will be heard throughout the entire country. . . . Then and only then will our advice and recommendations be given consideration." Gray said that labor was fully aware that the more than 3,000,000 building tradesmen are dependent upon the continued successful operations of contractors for earning their livelihood. In conclusion he stated that "American labor is for private enterprise from top to bottom—for less government, less regulations and controls, and less taxes."

The general picture concerning the training of apprentices in the construction industry is not good, according to the report of the AGC apprenticeship committee. While there was a gain of 900 bricklayer apprentices last year, the industry lost 9,300 apprentices in other trades. The total number of registered apprentices in training dropped from 101,800 in December, 1950, to 92,500 in December, 1951. A draft-deferment policy for apprentices is to be put into effect by the Selective Service System as soon as it is approved by the President. At that time, according to the committee, employers should be alert to file requests for deferment of apprentices selected.

Resolutions

At the closing general session of the 33rd Annual Convention, the AGC passed several resolutions covering the varied interests of the construction industry. From the contractors' point of view, the first one adopted was probably the most important. It urged that controls over construction activities be relaxed, and that they be abolished as soon as possible. A relaxation of credit controls that retard housing construction was also called for. The association recommended to Congress a Federal appropriation of $800 million for each of the years 1954 and 1955 for highway construction under the contract system.

Disturbed by the recent decision of the U. S. Supreme Court favoring the Bureau of Reclamation over the Wunderlich Contracting Co. of Omaha, Nebr., the convention went on record to urge legislation requiring judicial review of any decision of a contracting officer.

At the close of the convention, the new officers for 1952 were installed. Arthur S. Horner, President of the A. S. Horner Construction Co. of Denver, Colo., is the newly elected President of The Associated General Contractors of America. He succeeds Glen W. Maxon of the Maxon Construction Co., Dayton, Ohio. A native of Topeka, Kans., Horner graduated from the University of Colorado in 1922 with a degree in civil engineering. His firm was established in 1927, and has constructed major highway and heavy projects in the west.

Succeeding Horner as Vice President of AGC is C. P. Street, Secretary and General Manager of McDevitt & Street Co. of Charlotte, N. C., a building firm prominent in the southeast. Street is 50 years old, was born in Kentucky, and is a graduate of Vanderbilt University, Nashville, Tenn.

New officers of the association's three occupational divisions are as follows: Building—Chairman, W. Murray Werner, The Werner Co., Shreveport, La. Highway—Chairman, F. W. Heldenfels, Jr., Heldenfels Bros., Corpus Christi, Texas. Heavy — Chairman, Edward P. Coblentz, McLean Contracting Co., Baltimore, Md.

Next year AGC will meet in Miami, Fla., March 23-28; in 1953, in Los Angeles.

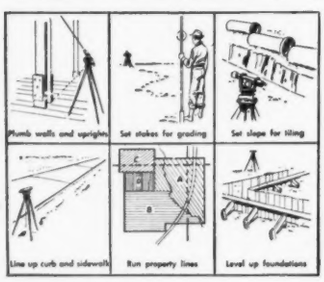
The careful selection and use of good lubricants at regular intervals will keep your equipment operating efficiently and economically.

White Universal Level-Transit...

the most versatile instrument you can own!

YES, the White "Universal" Level-Transit is the most practical, complete instrument on the market. Now available in a new improved model — the No. 3000 — with internal focusing, coated optics, guarded vertical arc. In fact, every feature to assure you lifetime durability and accuracy. And the price is *only $185**, complete with tripod. See your dealer, or write DAVID WHITE COMPANY, 371 W. Court Street, Milwaukee 12, Wisconsin.

Indispensable for all these jobs and many more



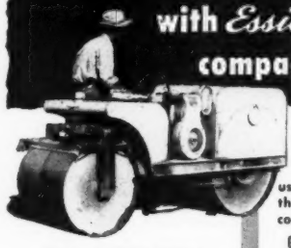
DAVID WHITE COMPANY

We offer the most expert REPAIR SERVICE on all makes, all types of instruments.

**Price subject to change without notice.*

7195

CUT ROLLING COSTS with *Essick* high compaction rollers



You can cut dollars off every rolling operation—whether paving a walk or a highway—when you use an Essick roller! They put the weight where it really counts, on the compaction roll!

CHECK THESE EXTRA ESSICK ADVANTAGES!

- **Adjustable roller weight**—water ballast system affords variable compaction to fit particular job.
- **Profit-saving operation**—immediate direction change—no pause at end of run to mar blacktop and require expensive hand-iron work.
- **Speedy compaction**—Essick Road Rollers effectively work a larger area in a shorter time than any other rollers in their size range!

Compare these compaction ratios with any other

Model	Tons	Compaction, lbs. per lineal inch
200	1½ to 2	60 to 110
300	2 to 3	110 to 148
400	3 to 4	105 to 160
500	3½ to 5	156 to 200

SEE YOUR NEARBY ESSICK DEALER OR WRITE DIRECT

Sales and Service Coast to Coast and in Foreign Countries

ESSICK

Essick Manufacturing Company

1950 Santa Fe Ave., Los Angeles 21

HEAVY-DUTY TRENCHER

WITH NEW IMPROVED SELF CLEANING BUCKET — Capacity ½ yd.

A heavy-duty trench digger, which is designed for a wide variety of trenching for any highlift tractor with hydraulic bucket control.

It will increase the tractor's production from 30 to 50 per cent. and is easily attached by one man in 15 minutes.

The Whitestown trencher is equipped with a ½-yard standard bucket. Special buckets, made to individual specifications, may be obtained. It will dig to a depth of 8 feet and dump at a height of 12 feet. This trencher has been in constant use for four years, and has proved to be rugged and satisfactory in every way.

- ***Immediate delivery can be made.***

The Whitestown Trencher is now available for use on the following hydraulic controlled tractors:
Allis-Chalmers HD-5G equipped with TS-5 tractor-shovel
Caterpillar D-4 and Trackson HT-4; Oliver with 4-A Lull loader
International TD-6 & TD-9 equipped with new Bucyrus-Erie dozer-shovel
International TD-6, TD-9 & TD-14-A with Hough bulldozer-shovel
Hough Model HM-Payloader; Trojan Loadster, Model LM-75

- ***Please specify make of tractor.***

WHITESTOWN TRENCHER CO., INC.

Wood Road, Whitesboro, New York — Phone: Utica 6-1117

Convention Calendar

April 14-15—Highway Short Course

Annual Highway Short Course, South Dakota State College, Brookings, S. Dak. Emory E. Johnson, Prof. Civil Engineering, South Dakota State College, Brookings, S. Dak.

April 14-17—Purdue Road School. Road Show

Annual Road School, Purdue University, Lafayette, Ind. Prof. Ben H. Petty, School of Civil Engineering, Purdue University, Lafayette, Ind. Also, Road Show, Indiana Highway Materials and Equipment Association, Purdue Armory, Lafayette, Ind. Tom Goby, Secretary, Highway Materials and Equipment Association, 310 High St., Bloomington, Ind.

April 17-18—Highway Conference

Annual Meeting, Kentucky Highway Conference, College of Engineering, University of Kentucky, Lexington, Ky. R. E. Shaver, Head, Department of Civil Engineering, University of Kentucky, Lexington, Ky.

April 17-18—Airfield Pavement Symposium

Symposium on Airfield Pavements for Jet Aircraft, U. S. Naval Civil Engineering Research and Evaluation Laboratory, Bureau of Yards and Docks, Port Hueneme, Calif. J. A. Bishop, Director, Soils and Pavements Division, Structures Research Department, U. S. Naval Civil Engineering Research and Evaluation Laboratory, Port Hueneme, Calif.

May 6-8—Highway Transportation Congress

Fourth Highway Transportation Congress, National Highway Users Conference, Washington, D. C. Arthur C. Butler, Director, National Highway Users Conference, National Press Bldg., Washington 4, D. C.

June 16-20—ASCE Convention

Summer meeting, American Society of Civil Engineers, Cosmopolitan Hotel, Denver, Colo. Don P. Reynolds, Assistant to the Secretary, American Society of Civil Engineers, 33 W. 39th St., New York 18, N. Y.

June 23-27—ASTM Meeting

Annual Meeting, American Society for Testing Materials, Hotels Statler and New Yorker, New York, N. Y. C. L. Warwick, Executive Secretary, 1916 Race St., Philadelphia 3, Pa.

AGC Protests Steelworkers' Closed-Shop Construction Aim

The United Steelworkers of America recently proposed that steel companies be prevented from "contracting-out" maintenance, repair, and construction work at steel facilities. The Associated General Contractors of America, Inc., has protested to the Wage Stabilization Board against this proposal. The letter of protest was written by James D. Marshall, Assistant Managing Director and Manager of Labor Relations of the Association.

Item 16 of the steelworkers' proposal to the WSB Steel Panel reads: "The [wage] agreement shall apply to all work performed in and around the properties and mines of the companies and all such work shall be done by members of the United Steelworkers of America. No contracting-out of such work shall be permitted." In its protest the AGC took the line that the contractors who perform work for steel companies employ workmen from the construction pool of trained workers; and that their labor agreements are always bargained with the unions of the Building and Construction Trades Department of the American Federation of Labor. Inclusion of Item 16 in the steelworkers' agreement with steel companies, Mr. Marshall said, would have the same effect as "an illegal combination of union and employer in restraint of trade; an illegal boycott of the products and services of the construction industry; and an illegal closed-shop condition for an uncertified union."

Mr. Marshall pointed out that a substantial portion of the business of many contracting firms is and has been construction, maintenance, repair, and reconstruction for steel companies and other industrial concerns. Construction companies have been able to execute this work promptly, skillfully, and economically, Mr. Marshall maintained.

Data on Dozing Attachment

A 2-page bulletin gives details on a bulldozer attachment adaptable to Ferguson and Ford tractors. The McGee angle-blade dozer is 5½ feet wide and operates hydraulically. It weighs 480 pounds and can cut 3 inches deep.

This literature may be obtained from The Tractor Sales Corp., 1409 Santa Fe Ave., Los Angeles 21, Calif., or by using the Request Card at page 16. Circle No. 711.

Semi-Dump Trailer

A broadside of a 16-yard semi-dump trailer is available from Talbert Construction Equipment Co., 7950 W. 47th St., Lyons, Ill. Adaptable for 4 or 6-wheel tractors, the 11,500-pound trailer features tubular axles and spring tandem suspension. The twin hoists in the rear of the frame have a forward action said to eliminate pushing against the anchor point of the body. Because the force of the hoist action is over the wheels, a considerable saving of dead weight is obtained in frame design.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 797.

Harris' Canadian Affiliate

John W. Harris Associates, Inc., New York, N. Y., building-construction company, announces the establishment of a Canadian affiliate of its company. The affiliated company, John W. Harris, Ltd., makes its headquarters in Toronto, and Kenneth D. Demarest, Executive Vice President, will be in charge of operations.

Heavy-Duty POWER CORDS

ALL RUBBER . . . FLEXIBLE. Made of rugged military cordage approximating civilian **2 Conductor #14**

Complete with cord clamp, spring action plug and heavy duty female connector.

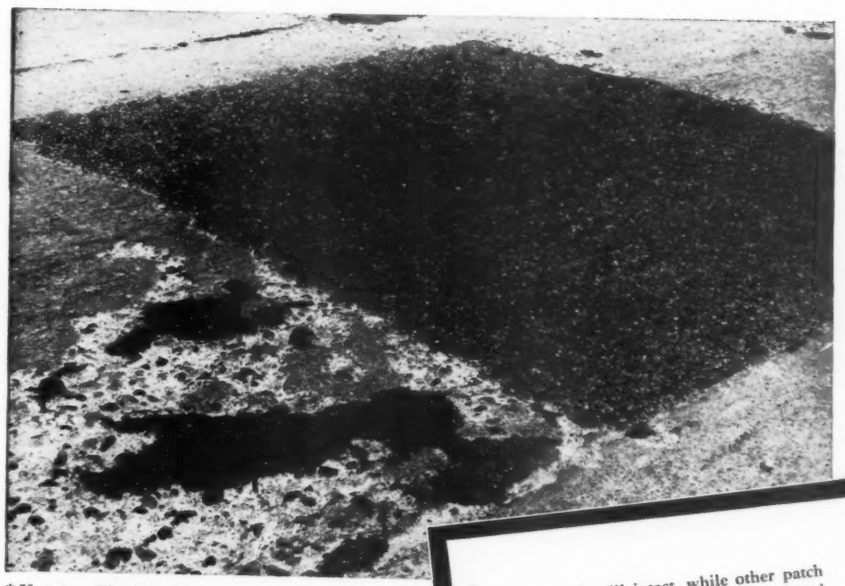
50 Ft. Set only POSTPAID . $5.95 ea.

100 Ft. Set only POSTPAID . $9.95 ea.

Distributors Wanted—write for details

Kingsdown Cable & Wire Co., Cords Dept., 245 Dodge Av., Evanston, Ill.

You can use Komac* Premix in any weather



*Koppers Trademark

KOMAC is still intact, while other patch mixes in foreground have been displaced and worn away. KOMAC is uniform and skid resistant, yet "tight".

● With this remarkable new road patching and paving premix you can repair and resurface all year round . . . rain or shine, hot or cold. Just sweep out the hole and patch with KOMAC Premix . . . compact it thoroughly, then open to traffic.

KOMAC Binders, offered exclusively by Koppers, mix easily and quickly with local aggregate. Since KOMAC Premix stays workable in the stockpile for a year or more, it is immediately available for use when you need it most. Send for free booklet. It will be helpful in setting up an all-weather repair and construction program.

KOPPERS Komac PREMIX

KOPPERS Tarmac®

For Road Building or Resurfacing

TARMAC resists the stripping action of water . . . even withstands the softening effect of gasoline and oil drippings.

You can speed up construction work with TARMAC because it penetrates quickly into roadbeds, mixes easily with local aggregates, adheres quickly and cuts through dust or moisture films to coat the aggregate.

KOPPERS COMPANY, INC., Tar Products Division, Dept. 456-T, Pittsburgh 19, Pa.

DISTRICT OFFICES: BOSTON, CHICAGO, LOS ANGELES, NEW YORK, PITTSBURGH, AND WOODWARD, ALA.

C. & E. M. Photos

A ¼-yard Wagner front-end loader on a Terratrac GT-30 crawler tractor scoops up broken concrete on an Omaha street (left). Then a Parsons Model 250 Trenchliner opens the trench to full depth for the installation of a new gas main.

Company Opens Trench For a New Gas Main

Ripping up streets has become an American pastime. Travel through any city, town, or hamlet and you're likely to find at least one street undergoing surface repair or the installation of new utility lines. The accompanying photographs show early stages in the installation of a new 12-inch cast-iron high-pressure gas main in Omaha, Nebr.

The work was started off with Ingersoll-Rand hammers fitted with 1¼-inch hexagonal points to remove the brick-top surface and 8-inch concrete base. The hammers were powered by a Le Roi Model 160 Airmaster and a Jaeger Model 185 portable air compressor. Bricks were stacked along the curve for replacement after the line was installed and the trench backfilled. The broken concrete was shoveled into a windrow alongside the trench, where it was scooped up by a ¼-yard Wagner front-end loader mounted on a Terratrac GT-30 crawler tractor, and dumped into a low-body Dodge truck for spoiling.

A Parsons Model 250 Trenchliner opened the trench to full depth. The clay-fill soil was spoiled in a windrow alongside the trench for later backfilling. Pipe came to the job in 16-foot lengths on a LaCrosse flat-bed trailer and was lowered into the trench by a Clyde Model U Handi-Crane. The Terratrac was used for backfilling operations. An MPT Hydra-Hammer compacted the loose fill to the proper density. New concrete was poured and the bricks replaced to finish up the job and open the street to traffic again.

The highway construction cost index reached an all-time high in the fourth quarter of 1951, according to the Bureau of Public Roads. The composite mile index stood at 166.7 per cent of the 1925-1929 base-period costs. The previous peak was reached in 1948 when the index was 165.2.

Straight-from-the-shoulder facts show you save in every way with

CHEVROLET *Advance-Design* TRUCKS

FACT No. 1

COSTS LESS TO BUY

Match a Chevrolet truck against any comparable truck capable of handling the same payloads. You'll find Chevrolet trucks *list for less*, yet bring you ruggedness, stamina and great features not found in the other truck.

FACT No. 2

SAVES MONEY ON THE JOB

Experienced truck operators know Chevrolet trucks cost least to own and maintain. Valve-in-Head economy, in the Chevrolet Loadmaster or Thriftmaster engines, saves on gas. Four-way engine lubrication reduces wear and oil costs. Rugged construction means long life.

FACT No. 3

RIGHT TRUCK FOR EVERY LOAD

Chevrolet trucks are *factory-matched* to your payload and service requirements. You don't buy "too much truck" or "too little truck." Frame, axles, springs, body, brakes and power are *balanced* for the job.

FACT No. 4

KEEPS ITS VALUE LONGER

Records show that Chevrolet trucks traditionally bring more money at resale or trade-in than many other makes. Chevrolet's market value stays up because the value stays *in!* More proof that Chevrolet is the best truck buy! See your Chevrolet dealer soon.

CHEVROLET ADVANCE-DESIGN TRUCK FEATURES

TWO GREAT VALVE-IN-HEAD ENGINES—Loadmaster or the Thriftmaster—to give you greater power per gallon, lower cost per load • POWER-JET CARBURETOR—for smooth, quick acceleration response • DIAPHRAGM SPRING CLUTCH—for easy-action engagement • SYNCHRO-MESH TRANSMISSION—for fast, smooth shifting • HYPOID REAR AXLE—for dependability and long life • TORQUE-ACTION BRAKES—on light-duty models • PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES—on medium-duty models • TWIN-ACTION REAR BRAKES—on heavy-duty models • DUAL-SHOE PARKING BRAKE—for greater holding ability on heavy-duty models • CAB SEAT—with double-deck springs for complete riding comfort • VENTI-PANES—for improved cab ventilation • WIDE-BASE WHEELS—for increased tire mileage • BALL-TYPE STEERING—for easier handling • UNIT-DESIGNED BODIES—for greater load protection • ADVANCE-DESIGN STYLING—for increased comfort and modern appearance.

CHEVROLET DIVISION OF GENERAL MOTORS, DETROIT 2, MICHIGAN

first in demand in value in sales — CHEVROLET

•COMPRESSIBLE—NON-EXTRUDING

•95% RECOVERY AFTER COMPRESSION

Ideal for joint filling in flood walls, outlet works and spillways, sewage treatment plants, etc. Cork Joint Filler keeps joint filled at all times. Light color does not mar appearance of exposed concrete.

Write for details on Cork Joint Filler and the complete line of Servicised Asphalt, Cork and Rubber Composition Joint Fillers.

SERVICISED PRODUCTS CORP.
6051 W. 65TH ST. • CHICAGO 38, ILL.

Stage Construction Steps Up Highways

Maintenance Men and Contractors Combine to Meet Growing Traffic Needs of Recreational Ozark Region of Missouri

C. & E. M. Photo

An Adams motor grader mixes a bituminous mat near Willow Springs, Mo. The laying of this mat requires highly skilled operators.

• AN efficient combination of state maintenance crews and contractors' forces is keeping highway construction in step with the general growth of one of the nation's newest recreational areas: the Ozark Mountain region of Missouri and Arkansas. By stage construction, the highways pass from earth to gravel, then to asphalt armor coat, and finally to road-mixed bituminous upper deck. And it looks as if asphaltic concrete may be in the not-too-distant future.

Division No. 9, at Willow Springs, Mo., exemplifies this growth process. The division is situated on an Ozark Mountain backbone in the center of such scenic attractions as Lake Taneycomo, Norfork Lake, Bull Shoals Reservoir, White River, Clearwater Lake, and Lake Wapapello. The division includes ten counties: Wright, Texas, Dent, Reynolds, Shannon, Douglas, Ozark, Howell, Oregon, and Carter.

Growth Poses Problem

Perhaps more than any other area in Missouri, the southern section around Willow Springs reflects the recent emphasis on recreation and leisure as a part of life. The construction of dams and lakes in this area has generated a tremendous surge of automobile pleasure traffic on the highways. A general improvement of the system reflects the growth of the region.

Highways with very low rural-traffic counts have moved up to the intermediate-traffic class. In fact, almost every mile of state highway in Division 9 is now in that classification, with some parts on the borderline between intermediate and heavy. Remarkable improvements have been made. In the past 10 years the earth roads have been completely eliminated. Today the division has 989 miles of gravel, about 773 miles of bituminous roads of various types, and 76 miles of portland-cement concrete. Most of the mileage is ordinary 2-lane highway, from 20 to 24 feet wide.

For many years the improvement work was done by state crews and equipment, but recently Missouri contractors, through their AGC representation, have asked for and been granted some of the asphalt work which borders on construction. While the first few jobs were slow and a bit rough until contractors' organizations began to click, it now appears that the combination of hired labor and contracting will get more work done to keep pace with highway demands.

How It's Done

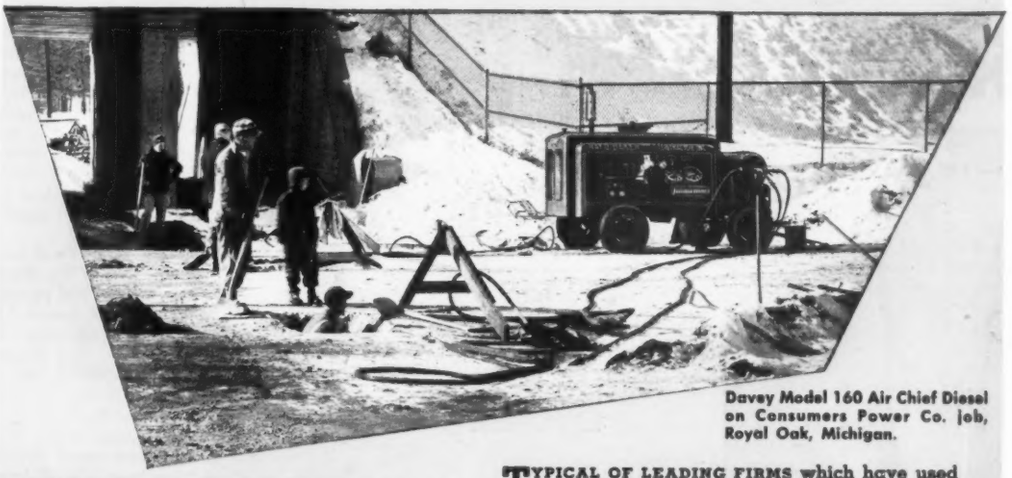
Stage construction of southern Missouri roads usually starts with the realignment and graveling of the old earth roadbeds to AASHO standards. Native gravel is plentiful and cheap in this division. As a rule it isn't as good as it looks, because of oversize and excess or deficiency of clays and colloidal material which tend to cause a wide variation of the plasticity index. Considerable sampling and testing was done several years ago, however, so that the maintenance men now know fairly well what pits contain satisfactory gravel and what manipulation is necessary to produce a base that will hold up under traffic.

The gravel roads are built up until that material is about 4 inches thick, compacted. When a road is slated for stage improvement, the state maintenance forces like to know about it a year or two in advance of actual work. They pay special attention to the gravel bases during this time. If the base is thin, they haul extra material. If fines have worked out of the gravel, they haul in good clay to replace them. In all cases they exercise exceptional maintenance to polish the gravel road perfectly smooth just before stage construction is due to start.

The division engineers have found that it is always a good idea for state forces and equipment to apply the prime coat of asphalt, because a patrol system of maintenance permits the state crews to catch the gravel surface at just the right moment to produce the best result. Contractors have too often been busy with other commitments so that their equipment arrived after the

(Continued on next page)

16 DAVEY COMPRESSORS serve Ray D. Baker Contractor, Inc.



Davey Model 160 Air Chief Diesel on Consumers Power Co. job, Royal Oak, Michigan.

Davey Model 160 at Auburn and Adams Roads, Detroit.

TYPICAL OF LEADING FIRMS which have used Davey Compressors for many years is *Ray D. Baker Contractor, Inc., Detroit.*

This company purchased its first Davey in 1934 and has since bought 21 Daveys. Today, Ray D. Baker Contractor, Inc., owns 16 Davey Compressors. 4 of these are Model 210 trailers, 2 are Model 160 trailers and 2 are Model 105 trailers. In addition, this outstanding contractor employs 7 Davey Auto-Airs (truck-mounted compressors driven directly from truck engines through Davey Heavy Duty Power Take-offs) and a stationary industrial Davey.

A-5106

Another Davey on Consumers Power Co. job, Royal Oak, Michigan.

DAVEY pioneers of air-cooled air

DAVEY COMPRESSOR CO. • KENT, OHIO

Stage Construction Steps Up Highways

(Continued from preceding page)

traffic had roughened the surface and whipped gravel particles out.

The prime coat consists of about 0.4 of SC-1 or SC-2. There are two 800-gallon asphalt distributors in the division to apply this material. As a rule, the priming is put on half width at a time, and the road is kept open to traffic. However, signs are placed at each end of the work urging motorists to be cautious and avoid the road if possible.

First-stage construction over the prime coat consists of an armor treatment of asphalt and cover material. Formerly, a great deal of 150 to 200-penetration asphaltic cement and MC-5 was used with the cover material, but now contract specifications permit the use of asphalt emulsion as an alternate. Most of the contractors prefer to use this material, which goes on at the rate of 0.3 gallon per square yard. Past experience and extraction tests have shown that approximately 17 pounds of cover chips are about right for this amount of asphalt. The cover chips are hauled in and applied by a spreader attached to the rear of a dump truck. The cover material is thoroughly embedded in the asphalt by either steel-wheel or pneumatic rolling, or a combination of both. Brooms distribute any excess that remains.

C. & E. M. Photo

Division Engineer H. M. Werbitzky (left) and his maintenance head, W. J. Eddleman, talk it over outside Division No. 9 headquarters.

Second-stage construction, which is being done more and more, consists of upper-decking the armor-coated bases with a 1½-inch mat of bituminous road-mix. MC-4 asphalt is used for this work, at the rate of 18 gallons per cubic yard of windrow. The aggregates for this mix are, like other filler and cover material, produced by contract, with screening and crushing units. Most of the deposits are well graded so excessive crushing is unnecessary.

After the material is windrowed and blade-dried in the sun for a few days, the asphalt is applied in several passes. The windrow is then road-mixed by blades. When complete coverage of every particle is obtained, the blades then lay down the material ahead of rollers, which compact it. One of the toughest problems has been to get blade men skilled enough to lay this bituminous mat. In some cases, skilled state operators have been laid off long enough for contractors to hire them for this work.

Wherever possible, aggregates located close by are used and are delivered to the road as machines produce them. Stockpiling involves secondary handling, so the engineers try to save that cost.

Stage construction has recently been regarded as a maintenance operation, and even the contracts which are let are paid for out of maintenance appropriations. At the present time the central Bureau of Maintenance in Jefferson City allots $500 a mile for medium-traffic concrete maintenance, $700 for bituminous maintenance on the farm-to-market system, $650 for bituminous maintenance on the state system, $325 for gravel maintenance, and about $30 a mile for gravel replacement.

Ice Is Headache, Too

Willow Springs is at the borderline between the snow and rain area of winter, and since much of the country is at a high elevation, ice becomes a serious winter problem.

It used to be possible to buy cinders at the roundhouse in Willow Springs, but most of the locomotives now burn oil or diesel fuel, so maintenance crews have to use sand to improve automobile traction. They have one sand spreader in the division; it operates out of Willow Springs near the greatest traffic concentration. The balance of sanding is a labor job, with men spreading the material by hand from dump trucks. Calcium chloride is added to the sand mix to give best results.

Snow is seldom a major problem, and ordinary push plows on 1½-ton trucks dispose of it in short order.

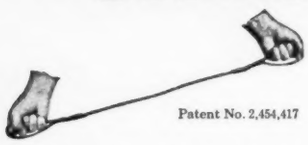
On snow removal, ice treatment, or routine maintenance of any kind, Division 9 members find that better progress is made if the crews tighten up to make the entire process close-knit. A patching crew with men working within ½ mile of each other is far more efficient than a crew strung out over a 2-mile stretch.

Big Equipment Pool

Division 9 has a sizable equipment pool, with individual units rented from the Bureau of Equipment of the Highway Department. There are 44 motor graders in the division, sixty-five 1½-ton trucks, 10 front-end loaders, two 800-gallon asphalt distributors, fifteen

(Concluded on next page)

MAKE THIS TEST YOURSELF...WITH A FREE Tuffy® SLING



Patent No. 2,454,417

Tie a knot in a Tuffy Sling, then pull it tight with both hands and feet. See how flexible it is — and how it straightens out without damage. The secret is in the braided fabric construction — a patented Tuffy feature!

Scores of wires are stranded into 9 parts, then machine woven into an interlaced wire fabric entirely unlike conventional wire rope slings. Even cutting one of the 9 parts does not result in stranding. And eye splices develop up to 95% of the fabric strength.

11 Types of Tuffy Slings If none of the 11 factory packaged Tuffy Sling types exactly meet your needs, Union Wire Rope engineers will develop one that does. Tuffy Slings are proof-tested to twice safe working load. The safe working load is stamped on a metal band attached to each sling. If you have your own rigging loft, Tuffy braided fabric is available by the reel.

MAIL COUPON TODAY FOR YOUR FREE SLING
This special 3-foot sample is yours without cost so that you can prove to yourself the advantages of a Tuffy Sling. Just mail the coupon.

UNION WIRE ROPE CORP

More scrap means more steel turn yours in today!

UNION WIRE ROPE CORPORATION
Specialists in Wire Rope, Braided Wire Fabric and High Carbon Wire
2260 Manchester Ave. Kansas City, Mo.

Gentlemen: Please have my Union Wire Rope Fieldman deliver my free Tuffy sling sample.

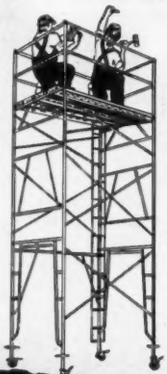
NAME_____

FIRM NAME _____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Safety is no Accident!



It's engineered into SAFWAY maintenance towers

Only Master Welders work on SAFWAY Equipment
Interchangeable parts constructed by safe, strong, lifetime welding of high carbon tubing.

All SAFWAY Equipment Treated with Rust Inhibitor
Maintains accurate fit of parts and fasteners to assure safe, rigid maintenance towers.

Enamel is Baked on All Surfaces, Inside and Out
Improves appearance of equipment—helps insure lasting fit of parts and long life.

All SAFWAY Equipment is Engineered to Last
With only routine care, Safway equipment will deliver a lifetime of safe, efficient service.

Write for this Free Bulletin

RENTED and SOLD by distributors everywhere

SAFWAY
STEEL PRODUCTS, Inc.
6240 West State St.
MILWAUKEE 13, WISCONSIN

Tubular Steel Scaffolding and Equipment

400-gallon trailer-type distributors, 2 power rollers, 15 pull rollers, five 40-hp tractors with pull graders, two 60-hp tractors with 12-foot pull graders, two 50-hp tractors with one scraper, a ½-yard power shovel, four 2-ton trucks, a car unloader, 2 tank car heaters and a booster, a sand spreader, and 32 power mowers.

To keep this equipment in running shape, the Division has its own shop at administrative headquarters, with another equipment garage and yard at the other end of Willow Springs. The shop is equipped to make major engine repairs, and to manufacture parts on lathes if necessary. Two shop-built items have proved valuable. A small rolling hydraulic hoist has been made for pulling engines, and a joined holder for holding odd-shaped pieces during welding has been made out of two gripper clamps, joined by rods with ball-bearing ends encased in tight clamps.

H. M. Werbitzky, Division Engineer, heads up the entire division organization, and W. J. Eddleman is Division Maintenance Engineer. Dean Wilson is Engineer of Maintenance for the Missouri Highway Department, and Rex M. Whitton is Chief Engineer.

Welded Continuous Overpass Yields Sizable Steel Saving

In an account of the construction of the North Galvez Overpass in Louisiana, Professor Walter E. Blessey told the American Society of Civil Engineers during its spring convention that 20 per cent of structural-steel tonnage had been saved. Continuity plus welding effected the saving.

Professor Blessey is a Tulane University Professor of Structural Engineering. In his paper—"Louisiana's First All-Welded Continuous Overpass"—he said that subsurface investigations in New Orleans, an area known for its poor soil conditions, had revealed that it was both practical and economical to make use of continuity. This saved about 20 per cent in structural-carbon-steel tonnage as against simple-beam carbon-steel construction which is generally used in the area, and 81 feet were spanned with rolled-beam sections. In addition, by using welding instead of riveting, it was possible to save another 7.3 per cent of structural-carbon-steel tonnage, of which 5.5 per cent was saved directly in splice plate material.

Construction of the overpass is incident to the construction of New Orleans' new centrally located Union Passenger Terminal, which will replace five outmoded structures now used by seven trunk lines. Thirty modern grade-separation structures will eliminate 116 out of 144 busy traffic crossings, so that New Orleans will no longer be a "city with a railroad terminal on every corner". The total cost of the project, said Professor Blessey, will be $50,000,000.

"Brace yourself now! I'm letting go!"

Data on Steam Generators

A 4-page catalog describing a steam generator for heating aggregate and water is issued by Littleford Bros., Inc., 457 E. Pearl St., Cincinnati 2, Ohio. The Kwik-Steam unit produces steam in 2 minutes from a cold start, and gives steam only when it is needed. Made in sizes from 20 to 165 bhp, it can be furnished with an electric motor or gasoline engine.

The unit operates automatically at about 85 per cent efficiency. It can be set to hold any desired pressure from 75 to 200 pounds. The company claims that its largest model will supply enough steam to produce 168 cubic yards of concrete per hour.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 790.

"It is the duty of every man to protect himself and those associated with him from accidents which may result in injury or death."—Abraham Lincoln.

CUT YOUR SOD-CUTTING WORRIES

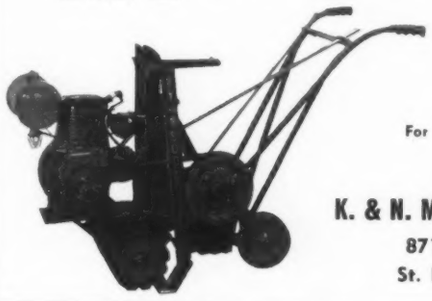
WITH THE *RYAN* POWER SOD CUTTER

★ **CUTS SOD CLEAN**—The high speed action of the cutting blade insures cleanly cut root ends, which in turn stimulates healthy growth.

★ **CUTS UNIFORM**—Unique design of blade operating under drive wheel produces uniform cut sod.

★ **CUTS EASY**—Strips sod from Green, Tee, Fairway or Nursery, in little more time than it takes to mow.

★ **CUTS COST**—No need to take several men from other duties when you want to do a sodding operation. With the RYAN, one man does the job quickly, and easily with very little "out of play" time.



★ **CUTS ANYWHERE**—The compactness of the RYAN Sod-Cutter makes for easy maneuverability in small or side hill areas.

For complete information write . . .

K. & N. MACHINE WORKS, INC.

871 Edgerton Street

St. Paul 1, Minnesota

P&H DIESEL ENGINES

2-CYCLE

Almost any part *FITS THEM ALL!*

• Think how that cuts your costs . . . simplifies parts stocking . . . speeds up service. 80% of *all* parts fit *all* P&H Diesels—1, 2, 3, 4, and 6-cylinder models. For example, the standard cylinder and liner assembly can be replaced in *any* P&H Diesel in only 40 minutes. You don't even drop the pan. Greater interchangeability is one more reason you should standardize on P&H Diesels. Available in bare engines, power units and generator sets. Write for literature, Diesel Division, Harnischfeger Corporation, Port Washington, Wisconsin.

P&H DIESEL DIVISION

HARNISCHFEGER CORPORATION

PORT WASHINGTON P&H WISCONSIN, U. S. A.

Data on Floor Resurfacer

A bulletin describing a floor-patching and resurfacing material is available from Flash-Stone Co., Inc., 30 E. Rittenhouse St., Philadelphia 44, Pa. Composed of pulverized natural rubber, asphalt-rock limestone, and cold asphalt emulsion, Immediate-Set is said to reduce brittleness in subfreezing weather, provide good traction when wet, and resist any tendency to rut or wave under heavy point loads. It is factory-mixed and requires no additives or processing.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 714.

Feel like "ending it all"?
WHEN A
TRACK TENSION BOLT
-BREAKS-

Don't do it! . . . just install a Quick-On Emergency Cap Tension Bolt, and you're going again in 30 minutes or less! Installed right on the job Quick-On's save an average of 6 to 8 hours on every breakdown . . . help you meet tough schedules by eliminating lay-up time for both men and equipment.
SAVE TIME and SAVE MONEY . . . Keep Quick-On Emergency Cap Tension Bolts handy at all times. Order from your tractor dealer today or write direct. Immediate delivery.

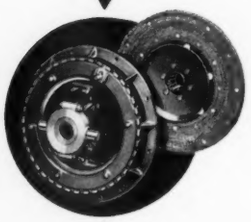
EASIEST AND QUICKEST TO INSTALL

QUICK-ON
T. M. REG. U. S. PAT. OFF.
TRACK TENSION BOLT

EMERGENCY CAP TENSION BOLTS
. . . . *Get you going again in 30 minutes*

Silver Booster MANUFACTURING COMPANY
132 W. VERDUGO AVENUE • BURBANK • CALIFORNIA

This Handy "Traveloader"



Scoops Up Dirt or Snow

The Adams TraveLoader picks up any kind of windrowed material and loads it into following trucks — at the rate of 5 to 15 cubic yards per minute. ROCKFORD CLUTCHES provide dependable power transmission control in this rugged machine. Let ROCKFORD clutch engineers suggest a practical clutch application for your heavy-duty machines.

B-W
B-W ENGINEERING MAKES IT WORK
B-W PRODUCTION MAKES IT AVAILABLE

ENGINEERING BULLETIN SENT ON REQUEST

ROCKFORD CLUTCH DIVISION BORG-WARNER
314 Catherine Street, Rockford, Illinois, U.S.A.

ROCKFORD CLUTCHES

Instrument Measures Concrete Air Content

An instrument which measures the air content in concrete is manufactured by E. W. Zimmerman, 228 N. LaSalle St., Chicago 1, Ill. The Acme air meter determines not only the amount of entrained air but also the air held within the pores of the aggregate.

Water for the test is introduced to a definite elevation above a sample of concrete of known volume. Air at a desired pressure is let in above the water, forcing it down into the pores of the concrete. With known changes in volume and pressure, the air content is determined.

The unit weighs 22 pounds and has a capacity of 0.22 cubic feet. Four C-clamps secure the cone top to the bottom container. Water is introduced by a special tube which prevents scouring of the concrete surface. The company claims that a complete test can be conducted in five minutes.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 762.

Data on Rotary-Type Mower

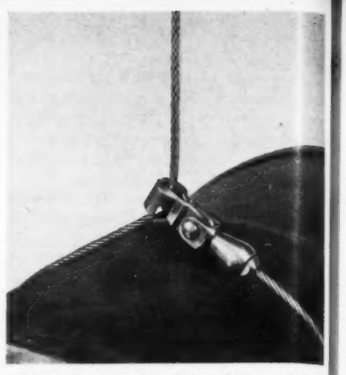
A pocket-size folder describing a two-wheeled rotary-type power mower is issued by Bachtold Bros., Inc., Forrest, Ill. Available in either self-propelled or push-type models, the mower has two forward speeds with a built-in clutch for quick starting and stopping. It is powered by a 3-hp Clinton engine.

The 26-inch mowing blade cuts as short as 1¼ inches, and a 20-inch saw blade can be used in either vertical or horizontal position. A cultivating attachment is also available.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 740.

White for Gradall Division

Irwin T. White is Sales Manager of the Gradall Division of The Warner & Swasey Co., Cleveland, Ohio, manufacturer of graders, lathes, threaders, and allied equipment. Mr. White has been with Warner & Swasey since 1946, and was Sales Engineer in the company's Detroit district office prior to his present appointment. Robert L. Groves, formerly Sales Engineer in Grand Rapids, succeeds Mr. White at Detroit.



Electroline makes this choker sling fitting of two hooks which overlap and co-act, and must be disengaged manually from the rope.

Choker Sling Fitting

A new choker sling fitting is announced by Electroline Co., 4121 S. LaSalle St., Chicago 9, Ill. It has two overlapping and co-acting hooks which are freed manually from the rope. A pivot between the hooks and the fitting reduces flexing of the cable. A device which prevents the rope from slipping through the hooks is also available.

Further information on this sling fitting may be secured from the company. Or use the Request Card at page 16. Circle No. 719.

Trailmobile Sales News

Word of a new sales-training department comes from Trailmobile, Inc., Cincinnati, Ohio, manufacturer of commercial truck-trailers and a subsidiary of Pullman, Inc. The new department, which is under the management of Richard P. Kramer, will develop a comprehensive training program for company salesmen. Mr. Kramer joined Trailmobile in 1941.

Herbert A. Hartley, with the company since 1946, is now Manager of Trailmobile's used-trailer department. Until his present appointment he was a field representative in the Akron, Ohio, area.

L. F. Manneschmidt recently took over as Manager of the company's Philadelphia factory branch. Mr. Manneschmidt joined the Trailmobile organization in 1948, and has held various posts in the company both in the Charlotte, N. C., territory and in Cincinnati.

a JAEGER never races to prime

To dewater this 58′ x 15′ pier cofferdam to 18′6″ depth and keep the gravel bottom drained, these Jaeger pumps operated continuously more than 500 hours, often repriming as frequently as every minute, *and never, at any time, ran faster than an easy 1400 rpm.* Pumps that must race at 1800 to 2000 rpm to meet these same conditions can never give you the sustained performance and years of service you get from a Jaeger "Sure Prime."

Compare pumps before you buy: The Jaeger has a larger shell and impeller, two independent priming actions, the only positively lubricated seal and the largest engine applicable. More pump for your money; more pump on your job.

See your Jaeger distributor or send for Catalog P-10

THE JAEGER MACHINE COMPANY 701 Dublin Avenue Columbus 16, Ohio

COMPRESSORS • MIXERS • TOWERS • PAVING MACHINERY

Cement Plant Boasts Million-Barrel Yield

Slip Forms Speed Concrete Work in Tank and Silo Structures Of Marquette's New Multi-Building Plant Down South

• SINCE the beginning of the year, cement users in the Deep South have had a new source of supply: the one-million-barrel-a-year plant that Marquette Cement Mfg. Co. constructed a mile west of Brandon, Miss. The first cement plant to be built in the Magnolia State, it is on U. S. 80, only 11 miles east of Jackson, capital and largest city of Mississippi. The 400-acre site is also served by the Yazoo & Mississippi Valley railroad. Manufacturing all types of portland and masonry cement, the new plant will ship its products to markets in Mississippi, Louisiana, and southeastern Arkansas.

Construction got under way in December, 1950, after the gently rolling site was cleared of brush and timber. M. T. Reed Construction Co. of Jackson, Miss., was the general contractor on the buildings, while the specialized slip-form erection on the tanks and silos was handled by Crosby Construction Co. of Chicago. The plant layout was designed by Marquette's operating and engineering departments while Crosby attended to detailing of structures and some mechanical details. The project was completed by the end of 1951 at an estimated cost of $6,000,000.

Built of reinforced concrete, the various buildings, tanks, and silos—strung out generally on an east-west axis—attest the fact that the manufacture of portland cement is an intricate process in which numerous different operations are involved. The soil in this area, mostly sand-clay or hard-clay strata, provided a suitable foundation. Because of the great weight of some of the structures together with their contents, treated-timber piles were driven to support the foundations for the tanks, the silos, and the piers carrying the rotary-type kiln— a sheet-steel tube 450 feet long x 12 feet in diameter.

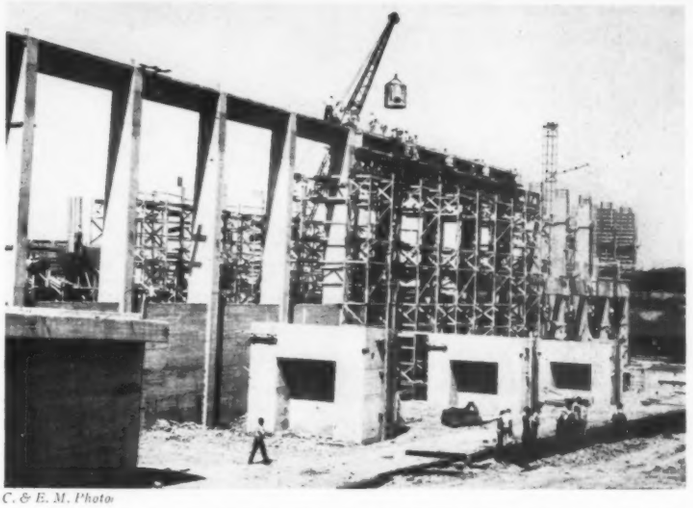
Multi-Building Plant

Largest structure in the multi-building plant is the raw-storage building—484 feet long x 100 feet wide x 86 feet high, measured from the top of the footing to the roof. Along each side of its length is a footing, 20 feet wide x 2½ feet deep, which supports 23 columns built on 22-foot centers. At the base these columns are 2 feet 4 inches x 5 feet in area, and taper in on two sides to a section that measures 2 feet 4 inches x 3 feet 6 inches at the top.

Steel trusses span the width of the building and support a precast-concrete-plank roof. Concrete girders for a bridge crane running the length of the building are laid along the tops of the columns, 58½ feet above the footing; the crane span is 100 feet. Concrete retaining walls at the sides extend part way up between the piers, but above that level the sides are open. The tall columns were built up in 12-foot lifts.

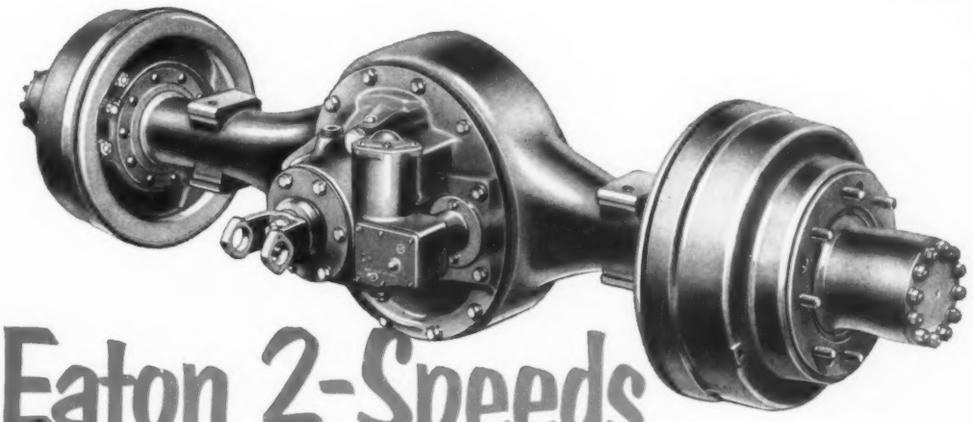
Next in size is the mill building, 242 feet long x 67 feet wide. Other structures include a crusher building, 25 x 40 feet, with a foundation 42 feet below ground level; a motor room, 32 x 175 feet; a shop and storeroom, 40 x 120 feet; a substation 75 x 80 feet, with power and light for the plant

(Continued on next page)



C. & E. M. Photo

A crane girder is poured atop the columns of the raw-storage building. A Link-Belt lifts a Blaw-Knox-yard bucket to the forms.



Eaton 2-Speeds are designed and built to stay on the job

THESE EXCLUSIVE Eaton features are the reason why: planetary gearing distributes pressure and wear over a number of small gears, resulting in lower unit stress; forced-feed oiling system provides positive lubrication to all moving axle parts at even slowest vehicle speeds; extra heavy construction eliminates the possibility of distortion or misalignment under excessive loads. These three features add up to longer parts life, outstanding dependability, minimum time in the shop and low maintenance cost. Let your dealer explain how Eaton 2-Speeds will help your trucks haul more, faster, longer, at lower over-all cost.

EATON 2-Speed Truck AXLES

Axle Division
EATON MANUFACTURING COMPANY
CLEVELAND, OHIO

PRODUCTS: Sodium Cooled, Poppet, and Free Valves • Tappets • Hydraulic Valve Lifters • Valve Seat Inserts • Jet Engine Parts • Rotor Pumps • Motor Truck Axles • Permanent Mold Gray Iron Castings • Heater-Defroster Units • Snap Rings Springtites • Spring Washers • Cold Drawn Steel • Stampings • Leaf and Coil Springs • Dynamatic Drives, Brakes, Dynamometers

SELF-PRIMING CENTRIFUGAL PUMPS

RICE

Engine, belt, and electric driven pumps with many new features to give you outstanding performance at low cost. A.G.C. rated. Write for special bulletins.

RICE PUMP & MACHINE COMPANY
220 N. Milwaukee St. Grafton, Wis.

Cement Plant Boasts Million-Barrel Yield

(Continued from preceding page)

operation furnished by the Mississippi Power & Light Co.

Long Kiln

Starting at one end and running parallel to the raw-storage building is the layout for burning the ground material, the operation which is generally considered the most fascinating in the manufacture of cement. From the 30 x 61-foot kiln feed building, the ground raw feed enters the 450-foot rotary kiln where the temperature is around 400 degrees F. The 12-foot-diameter plate-steel tube, lined with fire brick, is supported by steel tires resting on 7 sets of supporting rollers mounted on concrete piers.

Above the fourth set of piers from the front end is a small structure housing the girt gear that slowly rotates the long tube, which is pitched slightly, the low end being at the rear. From this end a jet of flame is shot into the kiln creating temperatures up to 2,800 degrees F, or hot enough to melt steel. The heat turns the fine mixture into clinker, hard enough to scratch glass.

At the low end of the kiln is the 40 x 110-foot cooler building, where the marble-size clinker is cooled with air. Clinker is stored until needed, then reground with gypsum to a fineness that permits 90 per cent of the end product—portland cement—to pass through a sieve that has 40,000 openings to the square inch. Beyond the cooler building are the tall silos where the cement is stored until drawn out as required for bagging and shipping.

Cylindrical Structures

Cylindrical structures at the cement plant are divided into four groups: (1) four clay and marl tanks; (2) six slurry-blending tanks; (3) two kiln feed tanks; and (4) ten storage silos. The four clay and marl tanks are each 55 feet in diameter x 24 feet 2½ inches high, and are complete with the necessary agitating equipment.

The six slurry-blending tanks are each 23 feet in diameter x 60 feet in height, and are built up from a slab foundation 54 x 77 feet that is 3 feet 4 inches thick. The two kiln feed tanks are each 55 feet in diameter x 24 feet 2 inches high. Tallest structures of the plant are the ten cement-storage silos, each being 27 feet in diameter x 93 feet in height. Each holds 10,000 barrels, giving the plant a storage capacity of 100,000 barrels of cement. The pack house alongside measures 40 x 150 feet.

The group of storage silos also has a slab foundation, 66 feet wide x 147 feet long x 4 feet deep. These heavily reinforced mats are supported on treated-timber piles as are the kiln piers. Piles are 30 feet long, and were driven on an average 3-foot spacing both ways to a bearing of 25 tons. Their butts are embedded 6 inches into the concrete slab. Altogether some 2,000 piles were driven on the project.

Transit-Mix Concrete

Concrete used in the construction of the plant totaled approximately 18,000 cubic yards, and was supplied via transit-mix trucks by the Jackson Ready Mix Concrete Co. of Jackson from its batch plant, only a 12-mile haul to the job site. For some of the larger pours as many as 20 truck mixers were in service. A 6-bag mix, made up of local sand and gravel and Marquette cement, shipped in from the Cape Girardeau, Mo., plant, was designed to give a strength of 3,500 psi at 28 days. Darex air-entraining agent was added to the mix at the batch plant.

Reinforcing steel amounted to 1,500 tons, and was supplied by Contractors Material Co. of Jackson. The contractors estimated that they built 115,000 square feet of forms to contain the concrete. On the building work, the forms consisted of 1-inch lumber backed with 2 x 6 studs on 16-inch centers and double 2 x 6 wales, spaced according to the load; Superior concrete ties held the panels together. U. S. Rubber Hydron lining was stapled to the inner side of the forms, both to provide a smoother surface and to promote the curing of the concrete. After the forms were removed, the remainder of the curing was done with water.

C. & E. M. Photo

A Northwest crane lifts a Blaw-Knox bucket to the slip forms on the slurry-blending tanks.

For the footings and slab pours, the concrete was chuted directly from the truck mixers into the forms. On the higher lifts, the concrete was discharged into Blaw-Knox ½-yard and 1-yard buckets which were lifted to the forms by cranes. Most of the placing was done with a Link-Belt Speeder equipped with a 90-foot boom, a Northwest crane with a 60-foot boom, and a Michigan ¾-yard truck crane. Biggest unit on the job was a P&H 1055 dragline equipped with a 100-foot boom and a 4-yard bucket. This machine handled some of the deep excavation, and is part of the permanent equipment at the plant, used to dig out raw material at a nearby quarry.

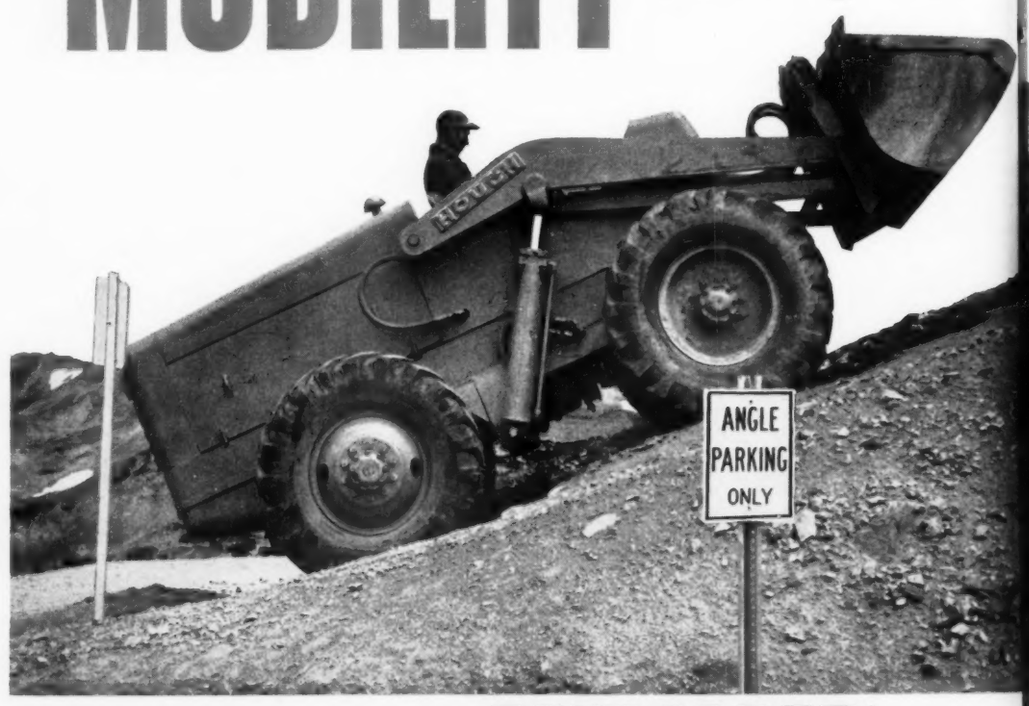
Slip Forms

Wooden slip forms contained the concrete in the erection of the tanks and silos. They permitted continuous pouring of the high walls, since they could be raised while the concrete was still in a plastic state. Walls in these structures are generally either 9 or 10 inches thick. Forms were 4 feet high, constructed of 1-inch tongue-and-groove lumber set vertically, and backed with two horizontal wales, each consisting of three 2 x 6's cut out to the radii of the circles.

Structural-steel yokes 3 feet wide, with legs 6 feet 10 inches high, straddled the inside and outside forms of the wall, holding the ribs together. They were spaced 7 to 8 feet apart, with their cross members near the

(Concluded on next page)

MOBILITY *to the job!*



4-WHEEL DRIVE PAYLOADER®

The hundreds of Model HM "PAYLOADER" owners are real proof that this unusual tractor-shovel is a money-maker. Many owners are repeat buyers and some have fleets of six or more.

Why is the Model HM a money maker? First, it gets to the job *quickly* under its own power — over street, highway or ground — eliminates the time and expense of trailers. Second — it masters many different jobs — excavates, loads trucks, carries, bulldozers, grades, spreads, strips, backfills . . . acts as a mobile crane . . . is excellent for drawbar work and for many types of material handling. Third — it gives crawler-like traction on the job, yet works on pavements without damaging them — as well as on earth, sand, rock, mud or snow. Fourth — it maneuvers fast and easily — thanks to four speeds reverse as well as forward, plus power-booster steer. Fifth — double-acting rams raise and lower the booms, dump and close the bucket, exert tons of down-pressure for tough digging conditions.

See this big 1½ yd. "PAYLOADER" in action and you'll understand how it has sold itself to hundreds of contractors, large and small. See what it can do for you. The Frank G. Hough Co., 762 Sunnyside Ave., Libertyville, Illinois.

Write for full information on the 1½ yd. 4-wheel drive Model HM, the 1 yd. 4-wheel drive Model HR, or any of the five other "PAYLOADER" sizes down to 12 cu. ft. capacity. No obligation.

HOUGH PAYLOADER®

THE FRANK G. HOUGH CO. SINCE 1920

center just above the working deck. When this working deck had finally been jacked to the top, it became the form on which the 6-inch roof slab was poured. Through the center of each yoke passed the 1-inch-diameter steel vertical jacking rod by which the forms were raised.

These rods were embedded in the bottom of the walls at the beginning of the pour, and the concrete hardened around them. Jacks with threaded sleeves gripped the rods, and as the jacks were turned they raised the forms. Jacking was done in unison over the entire group of structures, so that the forms for all the tanks or silos were raised at the same time as the concrete was being placed. Additional lengths of rods were connected as needed to reach the top.

C. & E. M. Photo.

At the foreman's whistle, men give jacks a half turn, raising the slip forms ¼ inch on the slurry-blending tanks at the new Marquette cement plant.

Hoisting Tower for High Work

For the lower portions of the tanks, a crane and bucket fed the concrete to a hopper on deck, and from there rubber-tired Georgia buggies transported the material to the forms. For the higher pours, a tower made of steel tubing was erected at one end of the structure, and the concrete was raised to the deck hopper by a two-drum platform hoist. As the forms filled up, the foreman blew a whistle and men sprang to the jacks, giving each jack half a turn which raised the slip forms ¼ inch.

In constructing the 93-foot cement-storage silos, a 143-foot steel tower with a Thomas hoist was employed. The platform hopper on the hoist held one yard of concrete. Concrete placing was continuous at an average rate of 6 inches per hour as the work progressed upward. Working day and night around the clock, the ten silos were completed inside of nine days.

At the battery of slurry-blending tanks, the concrete placing took longer because of some blocking out that had to be done within the tanks according to the design. The extra formwork involved naturally made the upward climb that much slower. The first 33 feet of tanks was constructed with the crane and bucket delivering the concrete. Then the placing was suspended while bin bottoms were installed, after which the rest of the concrete was handled by the tower hoist.

Working Platform

The working platforms, which also served as forms for roof decks, were built of solid materials with the concrete foundation slab serving as a base for laying out the work. Each 27-foot cement-storage silo form, for instance, was built around two 17-inch I-beams on 9-foot centers. The 12-inch flanges of the beams supported 2 x 8 floor joists spaced on 12-inch centers, over which was laid the 1 x 6-inch decking. The forms for all ten silos were thus built together, making one integral structure.

When the top was reached, 1-inch rods, 3 feet long, were driven through the concrete wall beneath the form in order to support the working platform when the yokes were removed. The I-beams were framed into the concrete structure and became a part of it; they were also set into the roof slab about ¼ inch. In order to prevent any binding of the slip forms as they were raised, the inside form was kept about 3/16 inch off plumb, but the outer form was kept firmly plumb. Finishers worked from a scaffold hung beneath the form, and turned out good results with the still-plastic concrete.

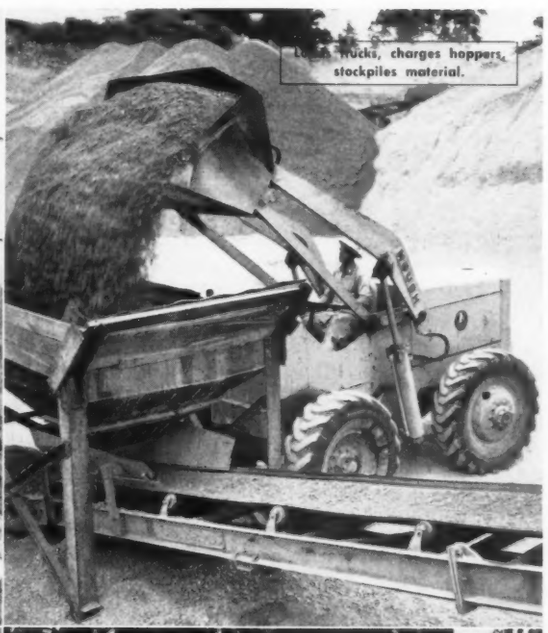
Operating personnel at the cement plant will be quartered in an L-shaped building having over-all dimensions of 110 feet long x 95 feet wide. The structure contains an office, laboratory, and washroom. Enough raw materials, marl and clay, are estimated to be available to run the plant for 50 to 60 years. They will be dug from a quarry within ½ mile of the plant and hauled in with rubber-tired earth-moving equipment. A 16,000-gallon diesel fuel tank will service these machines.

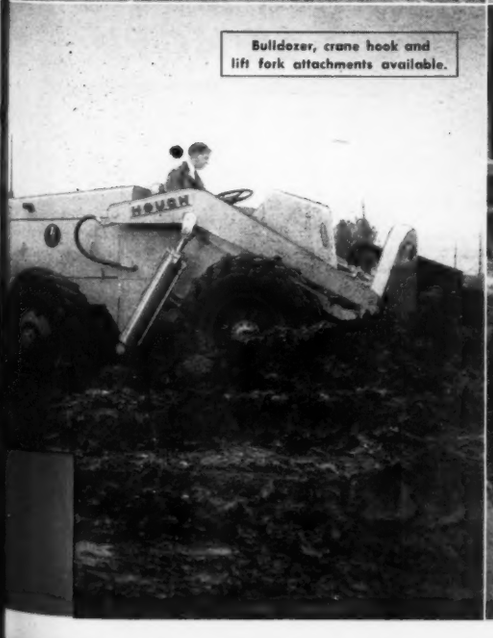
Personnel

At the peak of operations the contractors employed a force of 400 men on the construction of the cement plant. Lawrence A. Ashley was Superintendent for the M. T. Reed Construction Co., and W. F. Vatter was Superintendent for the Crosby Construction Co. Don E. Gondolfi was the representative for the Marquette Cement Mfg. Co. at the Brandon, Miss., project.

The operating staff for Marquette includes William Moyle, Plant Superintendent; and Jack McCrory, Plant Foreman. D. S. Colburn, Executive Vice President with headquarters at Chicago, directed the general construction. All engineering work was under supervision of J. C. Holin, Director of Engineering, also located in Marquette's main office in Chicago.

VERSATILITY *on the job!*





Changes NYC Address

United States Safety Service Co., Kansas City, Mo., manufacturer of Saf-1-Spec safety goggles, Pep-Up salt tablets, and other safety gadgets, has moved its New York City office to 450 Seventh Ave., New York 1, N. Y.

Take your choice of 60-hp diesel or 54-hp gasoline power for the Model HR 1-yard Hough Payloader.

New One-Yard Loader

A 4-wheel-drive tractor-shovel with 1-yard bucket is announced by Frank G. Hough Co., 822 Seventh St., Libertyville, Ill. The Model HR Payloader is made with either a 60-hp diesel or a 54-hp gasoline engine. It has four speeds in both directions, and rear-wheel steer. Double-acting hydraulic boom rams control all motions of the bucket.

The unit is designed to load, spread, strip, pull, and push. Bulldozer blades, crane hooks, fork lifts, and snowplow attachments are interchangeable.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 703.

LeTourneau Sales Personnel

Several changes have taken place in the staff of R. G. LeTourneau, Inc., Peoria, Ill. Henry Cain, for the past five years Chief Washington Representative for the company, is District Sales Representative for Nebraska, Kansas, Missouri, and southern Illinois. David W. Flint has taken over as Acting Chief Washington Representative with Jack McCann, formerly in the Advertising Department, as his assistant. William Barry has moved to the Domestic Sales Department, and Darrell Abernathy succeeds him as a special representative for the Government Sales Department. John Tuntas fills Mr. Abernathy's former position of Parts Co-ordinator.

CMC Transcrete truck mixers are designed to provide maximum payload at minimum rear-axle weight. They feature right-angle drive.

New Truck Mixers

A new line of concrete mixer-agitators is manufactured by Construction Machinery Co., 447 Vinton St., Waterloo, Iowa. The 3 and 5½-yard units feature right-angle drive and unobstructed drum opening. The company points out that the large drum and full-size mixing blades along its entire length provide thorough mixing and fast discharge. Both units are powered by Ford engines.

Further information on the Transcretes may be secured from the company. Or use the Request Card at page 16. Circle No. 721.

Data on Rust Preventive

A compound that prevents rust while keeping metal surfaces lubricated is discussed in a new booklet issued by Octagon Process, Inc., 15 Bank St., Staten Island 1, N. Y. Rustshield 2 is a phosphatizing compound that is said to change the surfaces of iron and steel parts into corrosion-resistant highly absorbent nonmetallic areas. The crystalline phosphate structure of the surface forms an oil-retaining base.

The treatment is not limited by precision tolerances, and has a high resistance to alkali. It is applied by first immersing the part in a cleaning bath, then a hot-water rinse, followed by the Rustshield 2, another hot-water rinse and finally a neutralyte.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 785.

Catalog on 3-Wheel Rollers

A bulletin describing general-purpose 3-wheel rollers is announced by Huber Mfg. Co., 202 N. Greenwood St., Marion, Ohio. It illustrates the 8, 10, 12 and 14-ton models on a number of compacting jobs.

It gives structural and operating details of the main frame, transmission, gear-train assembly, final drive, front end, and controls—along with complete specifications on the company's line of 3-wheel units.

This literature may be obtained from the company by requesting Bulletin No. H-150. Or use the Request Card at page 16. Circle No. 808.

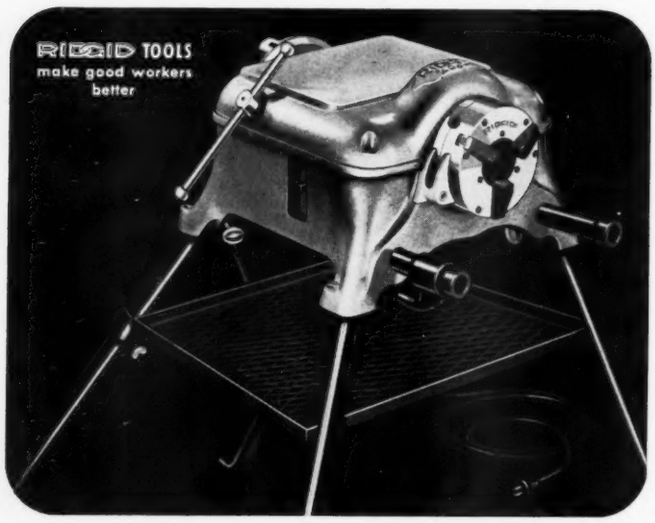
A. W. Crew Joins Republic

Alfred W. Crew is Field Engineer in the Republic Rubber Division of Lee Rubber & Tire Corp., manufacturer of belting, hose, and packing. Mr. Crew will make his headquarters in Charleston, W. Va., and will serve the major portion of that state.

WHY SKILLED PIPE FITTERS Demand

RIDGID

"400" PORTABLE POWER DRIVE



RIDGID "400"—bench model or stand with tray, capacity ⅛" to 2"—to 12" with geared tools.

Time-and-work-saving power for hand threaders, cutters, reamers

★ Extra light-weight unit—one man can handle it.

★ Lots of power—universal motor, forward, reverse, won't bog down on large pipe.

★ RIDGID design 3-jaw chuck, chuck wrench ejector; self-centering workholder in rear turns with pipe.

★ Sealed-in lubrication—no oil to spill.

★ See the remarkable "400" at your Supply House!

THE RIDGE TOOL COMPANY • ELYRIA, OHIO

★★★ RIDGID Work-Saver Pipe Tools ★★★

on the job LONGER

ALSO CARBIDE ROK-BITS • HOLLOW DRILL AND INTRA-SET STEELS

Cutting edges that stay sharp longer . . . ruggedness that resists breakage on the toughest jobs . . . are typical characteristics that identify Brunner & Lay tools every time. For tools that stay on the job longer, have your dealer show you the complete Brunner & Lay quality tool line for construction work of every kind.

Ask your dealer for a demonstration or write for complete information.

Brunner & Lay, Inc.

general offices and main plant

9300 KING STREET • FRANKLIN PARK, ILLINOIS

affiliated plants and warehouses
2425 East 37th Street
Los Angeles 11, Calif.
150 Leslie Street
Dallas, Texas

the reliable, leading source of supply since 1882

Avoid Legal Pitfalls

Edited by A. L. H. STREET, Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Govt. Was Bound When Official Agreed to Change

THE PROBLEM: *A Government cost-plus contract contemplated that the prime contractors (joint venturers) should receive only a specified lump fee as profit. Construction of an anti-aircraft-firing camp was involved. Early in progress it was discovered that swampiness of the site required sand and clay stabilization. Because the War Department would not permit the contractors to buy trucks, and rental was not feasible, the contracting officer directed the project manager to sublet haulage of the material to the lowest bidders. Subcontracts were awarded to two of the joint contractors, separately. This procedure having been authorized by the Government's representatives, could the Government withhold funds due the contractors on the ground that excessive profits were derived?*

THE ANSWER: No. (Branch Banking & Trust Co. v. United States, 98 Fed. Supp. 757, decided by the United States Court of Claims.)

The opinion of the court is chiefly interesting because of a discussion of basic legal rules affecting the right of the Government to repudiate authorizations given by its representatives to contractors. The court said it was clear that letting the subcontracts to two of the joint contractors violated the fixed-fee clause of the original contract. But it was equally clear that the Government's representatives had approved the transactions in the manner provided by the contract for making authorized changes. The only question was whether the approval was beyond the authority of the contracting officer and his authorized representatives. The evidence showed that the subcontract prices were reasonable and lower than outsiders had bid, and that this fact had led the Government's representatives to believe the Government was not concerned as to how much profit was derived under the subcontracts.

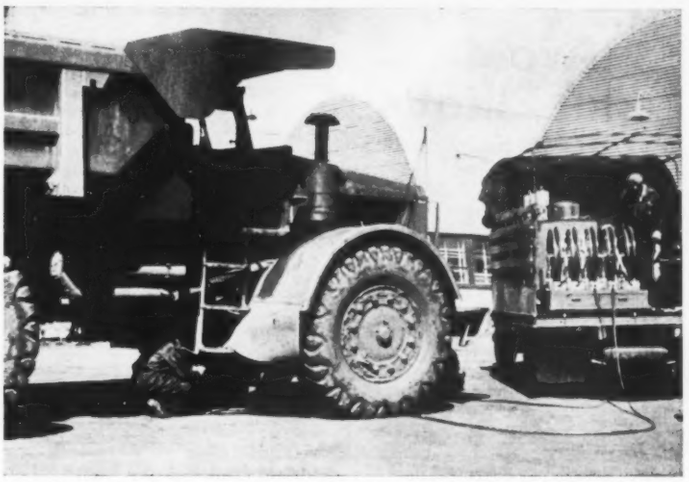
The Court of Claims recognized that disputes growing out of departures from original contract terms are governed by these fundamental rules of law: The Government is not bound by acts of its agents in agreeing to matters that the law does not permit, nor by agreements that would be legal if authorized by the Government, but which have not been so authorized. Generally an officer authorized to contract for the United States is impliedly authorized to modify an original agreement, especially when it is clearly to the Government's advantage. When the Government acts in its proprietary capacity—as it usually does under construction contracts—it can waive the provisions of an original contract, through acts of its representatives, just as a private owner can in dealing with a contractor.

The decision is in line with an earlier decision of the Court of Claims in the case of Corum v. United States, 81 Fed. Supp. 728. In that case four companies as joint prime contractors contracted with the Government on a cost-plus-a-fixed-fee basis. The Government agreed to reimburse them for third-party rentals. The contracting officer's representative approved a third-party lease that did not conform to recapture provisions of the prime contract. The Government unsuccessfully attacked the validity of the unorthodox provisions of the lease. In that case, the Court of Claims decided, first, that the contracting officer had acted within the scope of his authority, and, second, that the Government, having reimbursed the contractors for rentals paid under the lease, in effect ratified it.

Engineer's Rights Under Percentage-Fee Contract

THE PROBLEMS: *A general contractor and a civil engineer agreed that the latter was to be paid a salary plus 25 per cent of the net profits on jobs obtained and supervised by him. They did not specify how long the agreement should run. After numerous contracts had*

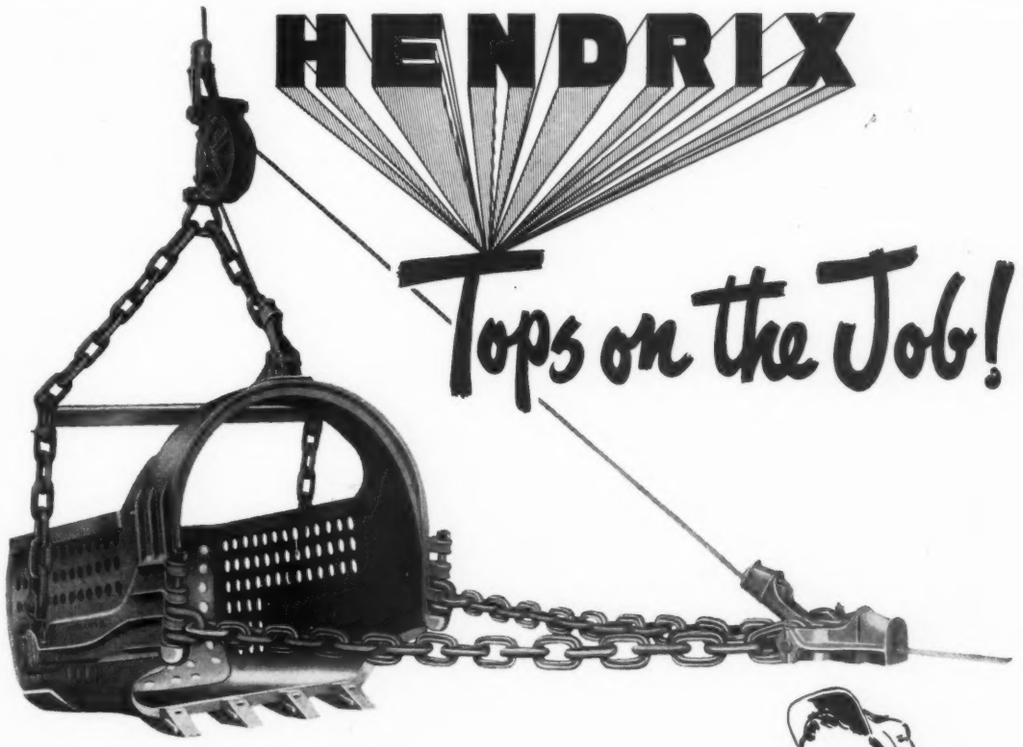
(Continued on next page)



A Graco Convoy Luber is shown here lubricating a 50-ton-capacity Euclid "Monster" (1LLD). The Lubers, made by Gray Co., Inc., Minneapolis, Minn., come ready assembled or "job-planned" with a special combination or quantity of pumps, hose reels, and other major component parts.

HENDRIX

Tops on the Job!



"MY MAINTENANCE TROUBLES ENDED WHEN I HITCHED UP A HENDRIX!"

That's what dirt contractors are saying to each other! Hitch-up a Hendrix Dragline Bucket for digging at lower cost per yard . . . more yards per minute. They know that Hendrix Buckets give them unsurpassed performance with minimum maintenance costs and delays resulting in BIGGER PROFITS ON EVERY JOB! A full load . . . smooth operation . . . clean dumping with less stress and strain on your dragline PLUS long life in heavy-duty service. THAT'S HENDRIX!

3 TYPES FOR EVERY DIGGING PURPOSE

⅜ to 40 Cu. Yds.

HENDRIX Lightweight DRAGLINE BUCKETS

Hendrix Buckets Without Perforations On Special Order Only

HENDRIX MANUFACTURING CO., INC.

MANSFIELD – LOUISIANA

Avoid Legal Pitfalls

(Continued from preceding page)

been completed and while others were being performed, the contractor discharged the engineer.

In litigation between the parties, the engineer counterclaimed for an accounting and payment of compensation. The principal questions presented concerned the proper method of computing the engineer's share of the profits with reference to equipment depreciation, and the rights of the engineer on being wrongfully discharged.

THE ANSWERS: The California District Court of Appeal, Third District, decided (Bishop v. Kelley, 224 Pac. 2d 814):

1. The parties had made an agreement on the terms above summarized, although there was nothing in writing except a brief letter by the contractor confirming that the engineer was to receive 25 per cent of the net profits under the agreement orally made. (Comment: The case presents an excellent example of the importance of reducing such agreements to writing, as a means of safeguarding against disputes and mutual misunderstanding.)

2. An allowance must be made in favor of the contractor on account of the "consumption" of his equipment through obsolescence and wear while it was being used to perform contracts in which the engineer was interested. In the absence of agreement to the contrary, rental value of such equipment should not be used as a basis instead of consumption, because rental value would involve a greater return.

But the trial judge erred in deciding how consumption of the contractor's capital equipment should be arrived at for each job: namely, by taking the value of each piece of equipment at the time it went into the work, and its value when it left the work. The contractor was not dealing in machinery, but performing a contract in heavy construction. The fluctuating values of the equipment he used and consumed could have nothing to do with the profits or losses he might suffer while conducting that business. "Such fluctuations do not come from the conduct of the business. . . . They are caused by the universal interplay of economic forces. . . . What might seem to be a profit today might turn into a loss tomorrow".

In the light of the terms of the agreement, when the trial judge or a referee appointed by him came to computing net profits, he might have received evidence as to what was a proper basis for computation, including testimony of experts skilled in evaluating such profits.

(Concluded on next page)

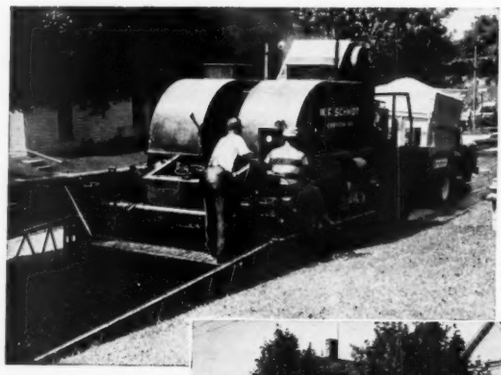
ON ASPHALT and GRANULAR SOILS
This NEW VIBRATORY COMPACTOR
IS A
Sensational PERFORMER!

In spite of its small size, the Jackson Vibratory Compactor delivers up to 4500 1¾-ton blows per minute. It propels itself and will firmly compact 900 to 1200 sq. ft. per hour — closely approaching theoretical density of the asphaltic mix being used, or 95% of maximum density in the case of granular soils compaction. It operates on 3-phase, 110V. 60 cycle AC from a *Jackson Power Plant mounted on a trailer which also has means for quickly picking up or lowering the Compactor. The ease and speed with which it may be moved from one location to another, together with the rapid, thorough job it does, makes it far superior to more cumbersome and more costly equipment on many types of operation. It is ideal for highway patching and widening, walks and drives, water-bound macadam bases, railway platforms and crossings; for compaction of sub-bases for concrete floors, in trenches, near abutments and many other places. Let us furnish you with complete details. It's a great time and money saver.

*Power Plant also generates single phase 110 V. 60 Cycle AC and may be used to operate other power tools and lights (Capacity: 2.5 KVA)

JACKSON VIBRATORS Inc.
LUDINGTON, MICHIGAN

Moto-Paver
Cuts Resurfacing Time-and Costs



Makes Old Roads and Streets Look— and Ride— Like New

Moto-Paver does the complete mixing and laying job on resurfacing work—in one continuous operation. Speeds the job—cuts the cost. Produces a smooth, waveless surface even on rough, irregular pavement. Makes old roads and streets look—and ride—like new. Gives a uniform mix using beach sand, gravel, crushed stone or slag aggregates, and various bituminous materials including tars, cutback asphalts, road oils or emulsions. Road speeds up to 25 mph. make possible quick moves from job to job.

Standard and heavy duty models for all types of resurfacing, retread and stabilization jobs under all kinds of operating conditions. See your local H & B distributor or write for Bulletin MP 49.

H&B ESTABLISHED 1907

HETHERINGTON & BERNER, INC.
Engineers • Manufacturers
731 Kentucky Ave. Indianapolis 7, Indiana

Yours for the Asking

An extra set of tear sheets of any CONTRACTORS AND ENGINEERS MONTHLY article you may wish to file for future reference.

Our Reader Service Dept. will send such articles pasted on standard file size sheets if you request it.

Avoid Legal Pitfalls

(Continued from preceding page)

3. Because the agreement did not fix a definite time limit, the contractor had a right to terminate it at any time. But that would not end the engineer's right to the agreed compensation on jobs under way when he should be wrongfully discharged. There was an implied condition of the agreement that a termination of the employment by the contractor would not take effect until completion of jobs under way. If, during that period, the engineer was wrongfully discharged and prevented from performing his duties further, he would be entitled to have his compensation measured according to the agreement, "less perhaps any amount he could have earned in other employment in the meantime".

4. The District Court of Appeal said that the contractor could not challenge in that court the validity of the agreement on the ground that it was not reduced to writing, as required by a statute, because (1) the question was not raised in the trial court, and (2) the agreement had been validated by part performance.

Contractor Was Not Bound To Foresee This Accident

THE PROBLEM: *A contractor constructed for a railroad a spur line crossing beneath an electric power company's wires. Because of insufficient clearance, a trainman riding atop a freight car was struck by the wires and injured. Was the contractor liable to the injured man?*

THE ANSWER: No. (Isbell v. Strider, 241 S. W. 2d 828, decided by the Tennessee Supreme Court.)

The court recognized that there are circumstances in which a contractor may be liable for injuries resulting from inherent danger created by his work. But it said that this case came within the rule of law that liability does not exist where injury is directly traceable to fault of a third party rather than to the contractor's negligence, if any. Here the contractor had no control over the height of the wires maintained by the power company nor over the height of freight cars that the railroad operated over the spur line, with men standing on top. The railroad was to blame in neglecting either to notify its trainmen of the danger involved, or to secure relocation of the wires before having the spur constructed.

Equipment Seller's Lien Outranked That of Trustee

THE PROBLEM: *A company sold equipment to a contractor for use on a public job, under a conditional sales contract which was not recorded. The contractor assigned it and other assets to a trustee for the benefit of creditors, without making any payment on the price. Under New York statutes was the company entitled to reclaim the equipment from the trustee?*

THE ANSWER: Yes. (In re Caruso-Sturcey Corp., 107 N. Y. Supp. 2d 693, decided by the New York Supreme Court, Westchester County.)

Under section 39-c of the New York Lien Law, materials furnished, but not used, for a public improvement may be reclaimed, excepting as against one buying, taking a mortgage on, or attaching the property in good faith, after removal of the materials from the site. Applying that and other related statutes, the court decided that the assignee for the benefit of creditors stood in no better position than the contractor, who could not question the validity of the seller's lien on the ground that it was not recorded.

Nor could the assignee complain that the conditional sales contract was not filed with the State Superintendent of Public Works and the Comptroller, as required by New York Personal Property Law, Sec. 65-a — that statute being for the sole benefit of the State or a subdivision thereof.

Contractor and Sub Jointly Liable for Blasting Damage

THE PROBLEMS: *In highway construction, damage was done to plaintiff's house by blasting operations conducted by a subcontractor. (1) Could the prime contractor be held jointly liable with the subcontractor, on the ground that the operations were inherently dangerous and that the prime contractor had reserved right to control the manner in which the blasting should be done? (2) Did the fact that six sticks of dynamite were discharged near plaintiff's home at one time and without use of a blasting mat justify a finding that the operations were inherently dangerous?*

THE ANSWERS: Yes. (H. L. Butler & Son v. Walpole, 239 S. W. 2d 653, decided by the Texas Court of Civil Appeals, Austin.)

SMOOTHER CONCRETE In Record Time

Nothing compares with the Johnson Float Finisher for obtaining smooth concrete in record time at record low cost! • This unit steps up the daily production of any paving crew, reduces amount of hand finishing and produces a perfect road surface with a variation of less than .05" in 10'. Handles slab widths up to 13'.

Built by MADSEN

JOHNSON *Float* FINISHER

MADSEN — Equipment that Serves®

Write for Literature

MADSEN IRON WORKS, INC.

P. O. BOX 589 • HUNTINGTON PARK, CALIF.

Minimize PITTING

Eliminate PATCHING

Insist on GLOBE FORM GREASE

The Wonder Grease for Concrete Forms

REGARDLESS of whether you use steel or wooden forms for concrete work — you can apply Globe Form Grease by spray, brush, or swab. This time-tested paste emulsion will reduce peeling and pitting to a minimum when forms are removed, and practically eliminate patching.

Due to its special adhering qualities, Globe Form Grease requires only a thin coating for utmost effectiveness. In fact, one gallon adequately covers approximately 200 square feet! And in addition — Globe Form is stainless, leaves a whiter smoother surface, and eliminates the need for painting.

Why not write for full particulars today? Once you use Globe Form Grease, you'll understand why engineers and contractors hail it as the "wonder grease" for concrete forms.

OILS *and* GREASES for every purpose DIESEL STEAM AUTOMOTIVE

Write for descriptive booklet of all Borne, Scrymser products.

BORNE SCRYMSER Since 1874

Our Laboratory Facilities are always at your disposal

BORNE, SCRYMSER COMPANY ELIZABETH, N. J. • CHARLOTTE, N. C.

A safety hat so good-looking, light, cool, and generally comfortable that men will want to wear it, says its manufacturer. It's called the Plastiglas Hedgard—comes in two models.

New-Type Safety Hat

A new style of lightweight safety hat is made by Davis Emergency Equipment Co., Inc., 43 Halleck St., Newark 4, N. J. The Plastiglas Hedgard is said to have high dielectric and shock-absorbing properties. A universal cradle makes it fit any size of head. Aluminum color and free interior air circulation add to its coolness.

One model has a broad slanting brim on all sides which protects the neck from dripping fluids and the sun. The other type features a visor-like brim. Standard finishes for both models are aluminum and brown.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 756.

Hough Promotes Tuohey

Carl W. Tuohey has taken over the job of representative for Sales District Two of The Frank G. Hough Co., Libertyville, Ill., manufacturer of the Payloader tractor-shovel. This territory comprises the states of New York, New Jersey, Pennsylvania, Virginia, Delaware, West Virginia, and all of New England. Mr. Tuohey, who joined the Hough organization in 1950, fills the vacancy created by the recall of William Cornell to active military service.

A roller hold-down device on this new Lippmann belt-type hopper-car unloader holds the belt down at the bend of the boom. The belt is 30 inches wide.

Hopper-Car Unloader

An improved belt-type hopper-car unloader is announced by Lippmann Engineering Works, 4603 W. Mitchell St., Milwaukee 14, Wis. Available in 24 and 30-inch widths, it features light weight, antifriction bearings throughout, and a special roller hold-down device at the bend of the boom. Elimination of all chains is said to reduce friction and wear to a minimum.

The units will handle sand, gravel, crushed stone, coal, coke, and other bulk material. The company claims that the rated capacity is over 300 tons of coal per hour. The 24-inch model weighs 2,700 pounds and is powered by a 5-hp motor. The high-capacity 30-inch unit weighs 3,240 pounds and has a 7½-hp motor.

Further information on this unloader may be secured from the company. Or use the Request Card at page 16. Circle No. 732.

Steel Column-Form Clamps

A bulletin on adjustable steel column clamps for supporting temporary formwork is available from Acrow, Inc., 510 N. Dearborn St., Chicago, Ill. It illustrates how the clamps can be used on square, rectangular, and polygonal columns with sides ranging in size from 10 inches to 4 feet.

The clamps come in three models and are about 2¼ inches wide x 5/16 inch thick. Wedges are driven into slots along the length to tighten the clamp around the columns.

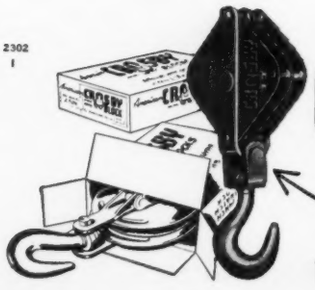
This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 809.

What's the capacity of this block?

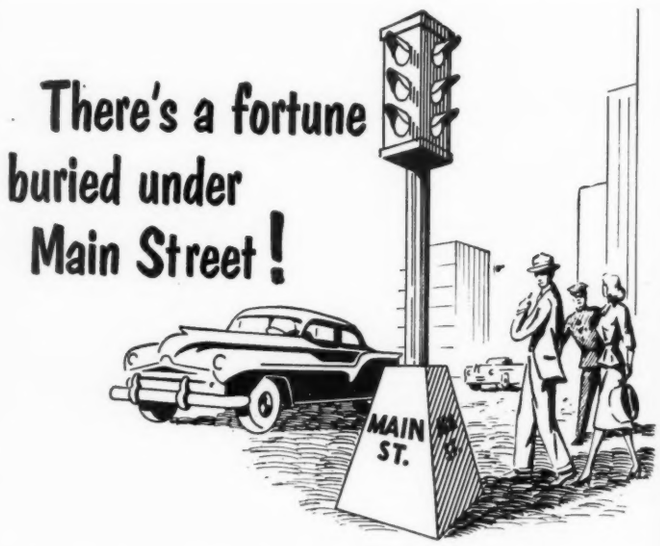
If you don't know.. don't use it!

If it's a 5-ton pull on a 3-ton wire rope block . . . *somebody may get hurt.* But if it's an American CROSBY wire rope block, it's LOAD-RATED . . . and your men will find its safe working capacity *embossed in the side plate.* Isn't that simple safety insurance? American CROSBY blocks are built with tremendous, rugged strength . . . the same kind of quality found in big American crane blocks. Individually packaged, too, for delivery in perfect condition. Sold by distributors and supply houses everywhere; made by the makers of genuine Crosby Clips, famous wire rope fasteners... AMERICAN HOIST & DERRICK CO., ST. PAUL 1, MINNESOTA.

2302



American CROSBY Load-Rated! WIRE ROPE BLOCKS



Every city, town, village where sewer pipe, water or gas lines are laid has buried thousands of dollars in the ground.

It's buried treasure . . . easy to locate but of value only if it has the proper crushing, beam, shock and bursting strength properties.

Cast Iron Pipe serves for centuries. Figures prove it . . . so does the pipe itself! Available in sizes from 2 inches to 84 inches.

Send for prices and specifications!

Warren FOUNDRY & PIPE CORP.
55 LIBERTY STREET, NEW YORK 5, N. Y.
Bell & Spigot Pipe • Flange Pipe • Mechanical Joint Pipe
Flexible Joint Pipe • Short Body Bell & Spigot Specials
WARREN PIPE CO. OF MASS. INC. 75 FEDERAL ST. BOSTON, MASS.

95 Years of Continuous Service

Local Pit Material For Sand-Clay Base

Base Is Primed, Given a Double Bituminous Surface Treatment: Highway Reconstruction Is 9.7 Miles Long

C. & E. M. Photo

Local sand-clay base material is end-dumped on the subgrade of U. S. 90 in Florida and spread by a Caterpillar D7 dozer.

• AMONG the many highway improvements completed last year by the State Road Department of Florida was a 9.7-mile stretch on U. S. 90 between Cypress and Sneads, Jackson County, in the north-central part of the state. The work consisted of grading, drainage structures, constructing an 8-inch compacted sand-clay base, and topping it with a double bituminous surface treatment. H. E. Wolf Construction Co. of St. Augustine, Fla., was the contractor with a low bid of $360,399.

The old 20-foot pavement, put down in 1925, had been a single bituminous surface treatment on a sand-clay base course. Because of inferior alignment, this highway was relocated except for a 1.7-mile section where the old and the new center lines practically coincided. A paralleling detour was provided at this location so that there would be no interruptions to the heavy traffic. The detour was also well built, consisting of 6-inch sand-clay base course which was given a shot of RC-1 asphalt applied at the rate of 0.25 gallon to the square yard for a width of 20 feet. The bitumen was then covered with a light coat of sand.

A 200-foot right-of-way was provided for the new location. The sharp curves of the old road were eliminated, and for one 4-mile stretch there was only a single 6-minute curve 350 feet in length. The excavation item of 380,393 cubic yards balanced out nicely in the cuts and fills; there was only a slight waste from one of the cuts

Typical Section

For 2,000 feet through the town of Sneads the highway went to four lanes with a curb and gutter section and a 61-foot Type 3 surface-treated pavement. Over the rest of the job the Type 2 bituminous surface treatment was 24 feet wide, with the pavement crowned from the center line on tangents at the rate of 3/16 inch to the foot. The 8-inch sand-clay base, 25 feet in width, was laid on a subgrade that was stabilized to a minimum bearing value of 50 psi, and for a width of 26 feet.

Flanking the pavement are 8-foot shoulders, sloping at the rate of 3/4 inch to the foot, and stabilized to a 6-inch depth. In fills up to 6 feet in height the sideslopes are 6 to 1; above 6 feet the fill slopes are 4 to 1. In cut sections ditches have a minimum width of 3 feet and a minimum depth of 1½ feet below the shoulder elevation.

The deepest cut was 17 feet and the highest fill was 15 feet. Any undesirable material such as muck or sticky clay was removed to a depth of at least a foot below the top of the subgrade, and backfilled with either suitable roadway excavation or dirt from a borrow pit.

Grading Operations

For muck removal the contractor used a Lorain 3/4-yard dragline which was also employed on the excavation for the drainage structures. An Osgood ½-yard crane assisted with the ditching and structures. Long hauls on the grading operations were handled by three Tournapulls with Carryalls averaging 13 yards a load. One-way hauls were as long as 1½ miles. On the short hauls the dirt was moved with a fleet of four LeTourneau Carryalls, averaging 23 yards a load, pulled by Caterpillar D8 tractors. Four D7 tractordozers were on hand either to level off the fills or to serve as pushers in loading the earth-moving equipment.

Fills were spread in 8-inch lifts and compacted by both tamping and rubber-tire rollers pulled by farm tractors. Two 3,000-gallon tank trucks with spraybars at the rear added water

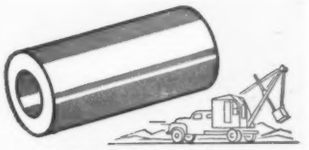
(Concluded on next page)

"QUICK-WAY" Reg. U. S. Pat. Off. Advanced Engineering

Specifies BRONZE BUSHINGS

Greater Strength and Reliability

1. "QUICK-WAY" Bronze Bushings withstand heavier loads than other types of bearings—at the speeds used.
2. "QUICK-WAY" Bronze Bushings do not require additional engine power or diminish lifting capacity.
3. "QUICK-WAY" Bronze Bushings eliminate sudden and complete breakdowns.
4. "QUICK-WAY" Bronze Bushings wear and wear. They have reserves of metal for wear.



"QUICK-WAY" Bronze Bushings Withstand Greater Loads

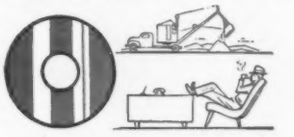
At the speeds used in shovel operation, large size Bronze Bushings support greater loads. The load is evenly distributed over the entire bearing surface.

Easier, Lower Cost Maintenance

1. "QUICK-WAY" Bronze Bushings are easy to adjust.
2. "QUICK-WAY" Bronze Bushings are easy to replace. Minimum of dismantling. Less lost time.
3. "QUICK-WAY" Bronze Bushings cost little to replace when compared to other types of bearings.
4. "QUICK-WAY" Bronze Bushings are grooved for proper lubrication.
5. "QUICK-WAY" Bronze Bushings allow for simple, sturdy construction of all moving parts.

"QUICK-WAY" Bronze Bushings Give Longer Service

Bronze Bushings wear and wear. An adequate supply of reserve metal is available for continued wear.



"QUICK-WAY" Bronze Bushings Give Dependable Service

No fear of sudden breakdown with Bronze Bushings. A Better Truck Mounted Shovel—A Better Bushing.

Mail Coupon Today!

"QUICK-WAY" TRUCK SHOVEL CO.
Dept. 58 • 2401 East 40th Ave.
Denver, Colorado • U.S.A.

Please send me complete details on "QUICK-WAY" truck shovels —four different models for large jobs and small.

Name _____
Address _____
City _____ State _____

The Pioneer in Truck Mounted Shovels

4 Models—From 3 to 10 Ton Crane Capacity.

DRILLING CONTRACTORS

Diamond and Shot Core Borings
Dry Sample Borings
Grout Holes and Pressure Grouting
Foundation Testing for Bridges, Dams and all Heavy Structures

also

Manufacturers of Diamond and Shot Core Drills, Accessories & Equipment

SPRAGUE & HENWOOD, INC.
Dept. C, Scranton 2, Pa.

Local Pit Material For Sand-Clay Base

(Continued from preceding page)

when necessary to bring the moisture content to the optimum 10 per cent. A complete field laboratory was provided by the State Road Department to see that the fills were stabilized to the proper density. Soil in the area was a mixture of sand and clay in varying proportions. Sandy sections had an average density of 114 pounds to the cubic foot, while in the areas where clay predominated the weight went up to as much as 135 pounds per cubic foot at optimum moisture.

Final shaping of the subgrade was done by an Adams and a Caterpillar motor grader, after which the 8-inch compacted sand-clay base course was constructed.

Base Course

Material for the base course was obtained from two borrow pits; one was located 3.3 miles off the west end of the project, and the other 1.6 miles from the east end of the job. Tests showed that the percentage of clay in the material obtained from these pits varied from 13 to 16 per cent. Some pits of sand alone were also made available, in case the proportions from the borrow did not blend well, but it was not found necessary to use them.

The pit material was somewhat stratified, with layers of sand and clay alternating. This division of materials in the natural state was overcome in the excavation operations by loading the dragline bucket over the full height of the pit face. Two machines were employed at the pits—a Link-Belt Speeder with a 40-foot boom and a 1-yard drag bucket, and a Marion 1¼-yard dragline. A fleet of 12 Ford dump trucks, averaging 5 yards a load, hauled the material and end-dumped it on the subgrade.

There it was spread by the dozers and mixed thoroughly by double-disk harrows. Water was added from the tank trucks to obtain the optimum moisture, and the sand-clay mix was compacted in a single 8-inch course by the tamping rollers. The motor graders shaped it to crown, and the final rolling was done by the rubber-tire units. The base-course material had an average weight of 126 pounds per cubic foot when compacted. If the required density was not obtained, the material was plowed, harrowed, watered, rolled, and shaped all over again. Irregularities in the profile were checked with a straightedge.

Surface Treatment

The bituminous work was done under a subcontract by the Smith Engineering & Contracting Co. of Pensacola, Fla. The base course was primed to a 25-foot width with RC-1S asphalt applied at the rate of 0.25 gallon to the square yard at a temperature of 150 degrees F. It penetrated to an average depth of ¼ to 5/16 inch. In about a week or 10 days the double bituminous surface treatment was put on, using a semisolid asphalt heated to 325 degrees F and applied by a distributor to a width of 24 feet.

The first application was 0.45 gallon to the square yard, after which the bitumen was covered with No. 11 slag (100 per cent passing the 1-inch sieve) spread at the rate of ½ cubic foot to the square yard. The second application consisted of a shot, 0.25 gallon to the square yard, which was covered with No. 15 slag (100 per cent passing the ¾-inch sieve) put on at the rate of ¼ cubic foot to the square yard. Each cover coat was rolled by a 5-ton 3-wheel roller.

Bitumen for the project was furnished by the Mexican Petroleum Corp. Cutback for the prime was shipped by barge from Destrehan, La., to Panama City, Fla., where it was unloaded into a 4,000-gallon feeder-tank truck and hauled 67 miles to the job site and transferred to a distributor. The semisolid asphalt was shipped in tank cars to Louisville & Nashville Railroad sidings at Grand Ridge and Sneads for use at the western and eastern ends of the job respectively. After the bitumen was heated in the cars, it was transferred to distributors. Slag for the cover material was supplied by the Birmingham Slag Co. of Birmingham, Ala. It was shipped by rail to the two sidings and stockpiled for use when needed.

Quantities and Personnel

The major items in the 9.7-mile Federal-Aid project on U. S. 90 included the following:

Clearing and grubbing	250 acres
Excavation	380,393 cu. yds.
Sand-clay base	55,475 cu. yds.
Prime, RC-1S	44,245 gals.
Semisolid asphalt	86,617 gals.
Slag cover material	3,185 cu. yds.
Concrete for structures	645 cu. yds.
Concrete pipe culvert, 18 to 48-inch	5,295 lin. ft.
Corrugated-metal pipe culvert, 18 to 30-inch	1,616 lin. ft.

H. E. Wolf Construction Co. employed an average force of 40 to 50 men on the contract working under the supervision of C. W. Wesley, Superintendent.

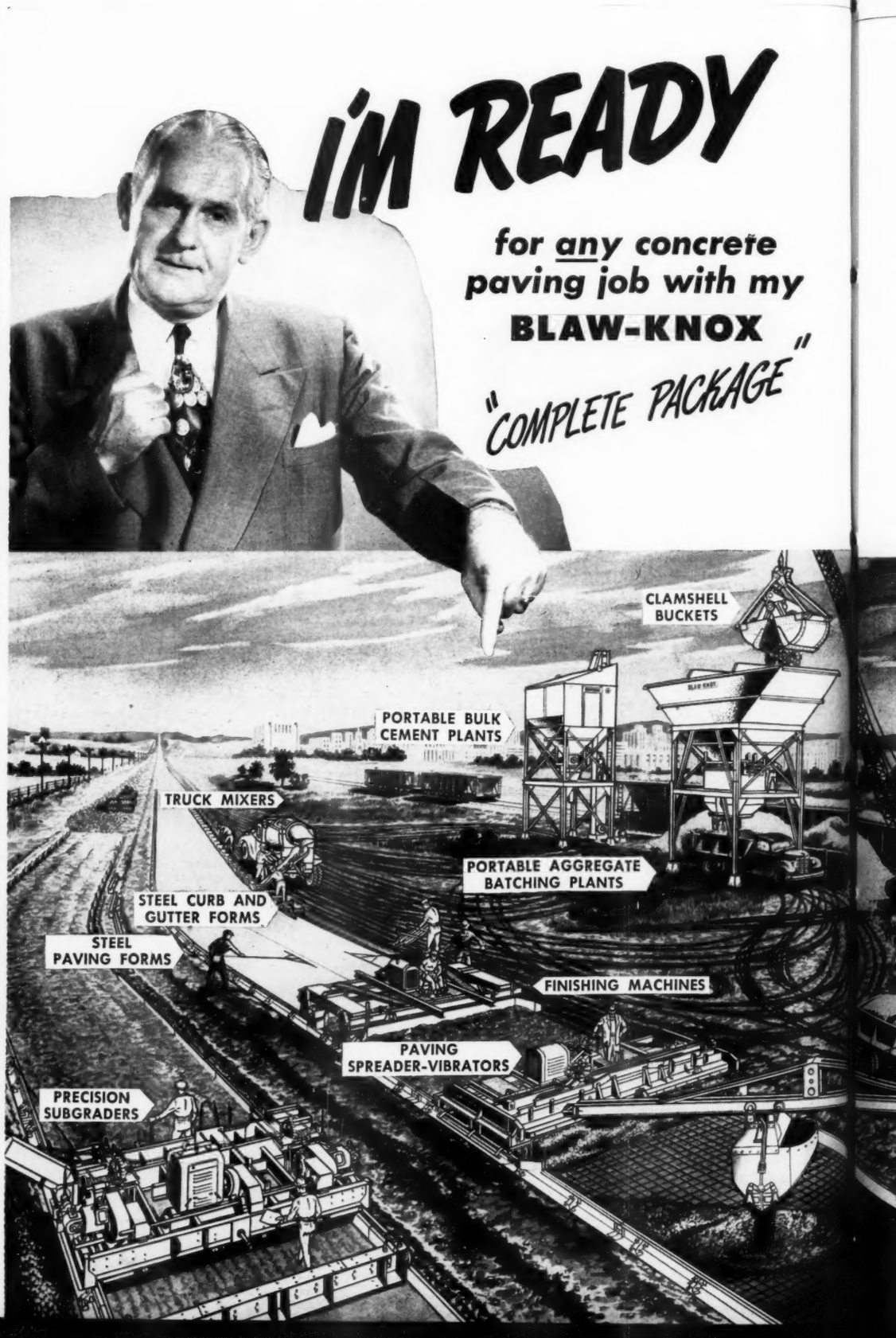
For the State Road Department of Florida, Richard W. Yost was Project Engineer. The job was in the Third District of which George L. Dickenson is District Engineer with headquarters at Chipley. The Department is headed by Sam P. Turnbull, State Highway Engineer; A. V. Shelton is State Construction Engineer.

Weed and Brush Control

A reference chart on chemical control of weeds and brush is offered by Thompson Chemicals Corp., 3028 Locust St., St. Louis 3, Mo. It cites types of weeds to be sprayed, the formulation to be used, and the amount per acre; and it gives directions for applying.

The types of weeds covered in the "Weed-A-Graph" are perennial weeds, annual weeds, and woody plants; there are directions for both foliage spray and basal-bark treatment of the woody plants. The formulations include Weedicide butyl ester 40, Weedicide amine, Bramblcide, Bramble-Weedicide, Penta-Weedicide, and Phytocide.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 779.



Venturi-Type Device For Fast Ventilating

A portable lightweight device for blowing or exhausting large volumes of air is made by Mine Safety Appliances Co., Braddock, Thomas, and Meade Sts., Pittsburgh 8, Pa. Operated by steam or compressed air, the M. S. A. Lamb Air-Mover can be used for cooling, tank purging, removing gas, cleaning, and general ventilating.

The unit consists of a bell-formed base, an annular orifice, and a horn-shaped body. Compressed air or steam is fed through a side inlet at the bell end into the annular orifice. The air's rapid expansion induces a venturi effect which draws surrounding atmosphere into the bell and out through the horn.

The 3-inch, 6-inch, and 10-inch models weigh 6½, 31, and 47 pounds. They are capable of discharging air at rates from 200 to 5,000 cfm. The company points out that the absence of moving parts practically eliminates maintenance problems.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 725.

Line of Earth Drills

Literature on a line of earth drills is available from The Buda Co., Harvey, Ill. The company makes the Model HBQ for fast drilling of 6 to 42-inch holes 16 feet deep. The HBR drills 12 to 30-inch holes 24 feet deep. A deep-hole unit, the HBL is designed for soil testing, prospecting, and blast-hole drilling; it drills 6-inch holes to depths of 100 feet.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 759.

Naugatuck West-Coast Plant

Naugatuck Chemical Division of United States Rubber Co., New York, N. Y., has recently completed a new plant on the west coast as part of a major expansion of facilities in that territory. The plant is located on Telegraph Road, Los Angeles, Calif., and is the western sales headquarters of the Division. It contains customer technical service laboratories, with storage facilities for resins, chemicals and other products in the Naugatuck Chemical line.

Look Before Loading Your Conveyor Belt

Conveyor belting needs consideration and care if it is to provide long service with minimum maintenance cost. Thermoid Co., of Trenton, N. J., manufacturer of belting, offers some hints on how to treat it.

The company, after an exhaustive study of the factors in belting deterioration, has come to the conclusion that wrong methods of loading do more than anything else to hasten such deterioration. The loading point is, in fact, the danger zone. Five important conditions of loading should therefore be observed.

1. Loading material should discharge at the same speed and in the same direction as the belt. Where material moves in the opposite direction or at a different speed from that of the belt, abrasion occurs at the loading point.

2. Lumpy material should be cushioned on the belting by a prelaid layer of fines. A screen or grizzly at the bottom of the loading chute, or, in some instances, an oval or fishtail notch cut in the lip of the chute, will deposit a layer of fines over the belting and protect it against bruising.

3. Chute discharge should strike between closely spaced carrier pulleys, or, with heavy materials, it should strike directly over rubber-covered or pneumatic idlers. In no instance should a material strike the belt directly above a solid pulley because the resulting hammer-anvil action will quickly render the belt unusable. To prevent undue depression of the belt which may allow material to escape, the chute should be located in such a way that material will strike the belt far enough ahead of the pulley to allow insertion of at least one belt-steadying carrier pulley. These pulleys, too, should be more closely spaced around the loading zone.

4. Falling distance from chute to belting, as well as discharge velocity of material, should be minimized. To prevent excessive speed of material flow, it should be possible to control the flow by pitching the loading chute properly. If this is not feasible, a baffle of iron or wooden bars should be constructed in the chute so as to reduce the speed of material flow onto the belt.

5. Chute construction should be such as to settle the load properly without allowing spillage or jamming of material around the chute outlet. Construction of skirt boards and flexible skirts needs careful consideration. Skirt boards should be long enough to settle the material before it leaves the loading area. As to flexible skirts, these are best improvised from rubber-covered edges of belting remnant, placed so that the rubber-covered edge contacts the belting. Otherwise, grit will collect in the fabric and abrasive action will result. Vertical spacing between chute skirt boards and belt increases toward the open end of the chute; thus the width of flexible skirts should increase toward one end. This construction allows uniform contact between the flexible skirt and belt over the entire length of the chute skirt, and minimizes spillage around the loading point. At the same time, wedged-in lumps of material can be worked free by the forward motion of the belting.

Koehring Elects President

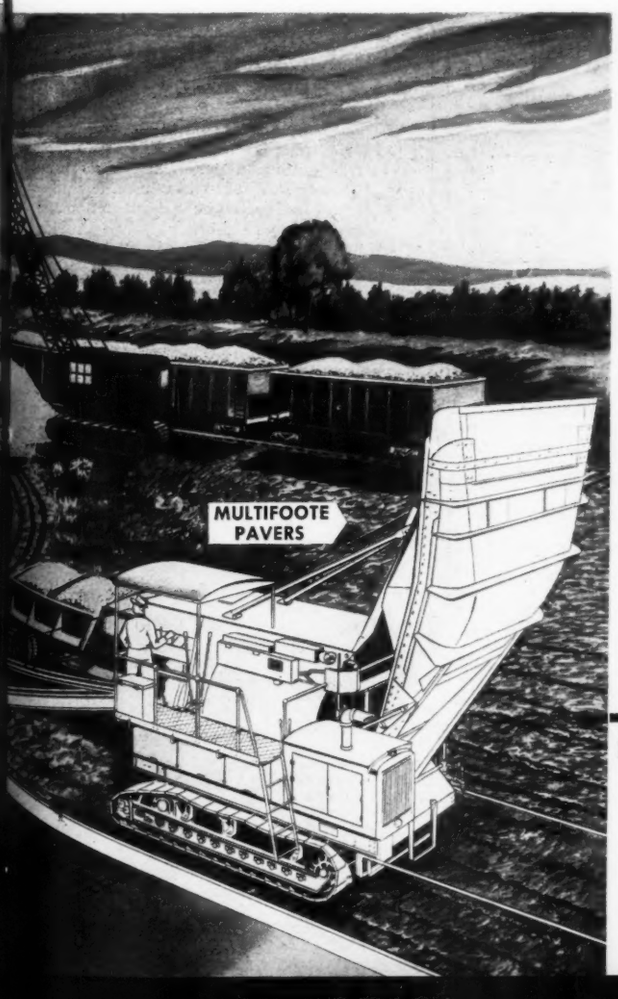
J. R. Steelman is President and E. A. Brugger is Vice President and General Manager of Koehring Co., Milwaukee, Wis., manufacturer of pavers, mixers, excavators, and other heavy-construction equipment. Mr. Steelman, who joined Koehring in 1936, succeeds G. E. Long as President, while the latter continues in the post of Chairman of the Board of Directors. Mr. Brugger has been with Koehring for 35 years.

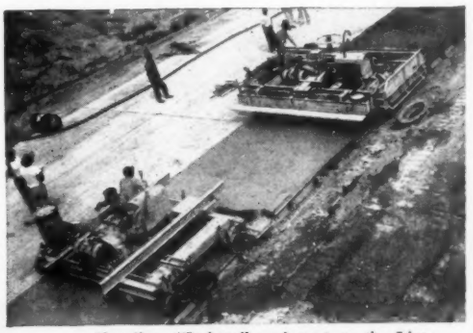
Superhighways, airports, even dams, bridges, buildings . . . when they're built with concrete, they're duck soup for my Blaw-Knox "Complete Package".

Costs are kept to the absolute minimum! The "Complete Package" contains every piece of equipment needed to assure a steady, balanced production flow with low-cost assembly-line efficiency. The job is 100% mechanized, from handling materials to finishing the slab.

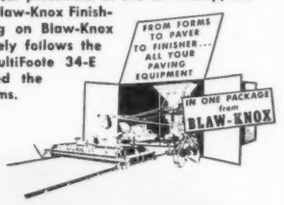
Other reasons why I can operate at lower cost are the "one-source" advantages my Blaw-Knox package gives me. Production steps along at a profit-making clip because wherever I'm working, I can get parts and expert service fast for *all* my equipment, from the nearest Blaw-Knox distributor. Just think—one Blaw-Knox Service Engineer takes care of everything. The entire package is backed by *one* construction-experienced manufacturer who is interested in my success. There's only one financial contact, too . . . that eliminates a lot of bookwork headaches.

With my Blaw-Knox "Complete Package", there's one thing I'm sure of. When the big, juicy contracts come up and they need a man with all the equipment to set up a low-cost job, *I'm ready!*





Blaw-Knox "Package" equipment on the Edens Expressway near Chicago. Blaw-Knox Batching Plants for aggregate and cement were used to insure accurate batching. The Blaw-Knox Spreader with vibratory pan attachment assured satisfactory and economical placement of the low-slump, air-entrained concrete. The Blaw-Knox Finishing Machine, also riding on Blaw-Knox Steel Paving Forms, closely follows the Spreader-Vibrator. A MultiFoote 34-E Dual Drum Paver placed the concrete between the forms.



BLAW-KNOX

BLAW-KNOX DIVISION of Blaw-Knox Company

Farmers Bank Bldg. • Pittsburgh 22, Pa.

NEW YORK • CHICAGO • PHILADELPHIA
BIRMINGHAM • WASHINGTON • SAN FRANCISCO

A V8 engine, developing 200 hp, powers the Walter Model ARB Snow Fighters.

New Snowplow Truck

A heavy-duty truck for snow clearing and general hauling is announced by Walter Motor Truck Co., 1001-19 Irving Ave., Ridgewood, Queens, L. I., N. Y. The Model ARB is the first V8 in the Walter line and develops 200 hp at 2,600 rpm.

Made to operate in the 32,000-GVW range, its tractor-type transmission provides six forward speeds with single-lever control. Traction is maintained by the automatic differential and driving action between all four wheels.

The 90-inch-wide cab is mounted over the front wheels to give the operator better vision. Tires are either 11.00 x 24 single front with dual rear, or 12.00 x 24 single front and rear. A 150-inch wheelbase unit with center scraper and one-way front plow is recommended by Walter for city use, and the shorter 126-inch truck with V front plow for highways.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 754.

Shunk Ups J. D. Newkirk

J. D. Newkirk is General Sales Manager of the Shunk Mfg. Co., Bucyrus, Ohio, manufacturer of grader blades, dump bodies, excavators, finishers, spreaders, and other road machinery. Mr. Newkirk has had more than 20 years' experience in the construction industry, much of it in distributor liaison He has been with Shunk for nearly three years.

New Safety Gloves

A mitten-type safety glove of heavy horsehide is made by General Scientific Equipment Co., 27th and Huntingdon Sts., Philadelphia 32, Pa. The Safti-Mitt has an adjustable tie string which makes it easy to put on and take off. According to the manufacturer, the hand pads are comfortable and long-wearing, and offer good protection.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 715.

Data on Concrete Equipment

A catalog prepared by Gar-Bro Mfg. Co., 2415 E. Washington Blvd., Los Angeles 21, Calif., covers the main units in the company's entire line—including power and hand carts for concrete and other materials, hoppers and batch plants, concrete buckets, and wheelbarrows. It includes action photos, descriptions, and specifications of each piece of equipment. It also contains a dimensioned diagram of the unit batch plant.

This literature may be obtained from the company by requesting Catalog No. 97, or by using the Request Card at page 16. Circle No. 768.

Silicone Film Treats Above-Grade Masonry

A silicone-type water repellent for above-grade masonry is announced by Dewey & Almy Chemical Co., 62 Whittemore Ave., Cambridge, Mass. Daracone penetrates the surface leaving no film to wear away, peel, or scale off, the company says. It cannot be dissolved by water and has an estimated life of from 5 to 10 years.

By lining pores and fissures of concrete, brick, cinder blocks, marble, and other building materials with a silicone film that repels water, Daracone is said to stop leaks without blocking the pores. This action allows trapped moisture inside to evaporate and leaves no salts on the surface to cause efflorescence.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 746.

Brochure on Distributors

A 6-page brochure on bituminous distributors with full-circulating spray-bars and swing-bar attachments is offered by Gunnison Mfg. Co., 201 Lynn Ave., Baraboo, Wis. It features the swing bars located at each end of the 7-foot center section and shows how they swing back in a 180-degree arc to prevent damage if obstructions are hit. All bars are equipped with No-Drip nozzles.

The brochure points out that the distributor's front-end control keeps working parts clear of dirt, dust, and fumes; protects the operator; and results in closer coordination with the driver. The distributors are furnished with tanks in 800 to 3,000-gallon capacities. The booklet lists complete specifications.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 771.

Low-Bed-Trailer Tire

A tire for supporting large low-bed-trailer loads is announced by Kelly-Springfield Tire Co., Cumberland, Md. The tread pattern is said to provide free rolling under heavy loads, and traction for lift trucks and mine equipment. Reinforced bead construction and heavy-duty high-tensile cord provide extra strength.

Sizes from 7.50 x 15 to 10.00 x 15 for rims from 5.50 to 7.50 are available. The larger tires take a 5,480-pound load at 85 psi.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 816.

Extra strength is built into the Kelly LBT tire to take the heavy loads of low-bed trailers.

LOOK JOE!...
It's Done Easier, Faster, More Economical When You SAW Before BREAKING with a Clipper "SAILS RIGHT THRU" CONCRETE SAW

Model C-130 Power Packed

Model C-75 Tops in Performance

Model C-20 Electric Powered

● For cutting Streets, Sidewalks, Building Floors, Airport Runways, CLIPPER is the fastest, most efficient Concrete Saw ever designed. Score precision-straight, smooth edges 1/4 to 1/3 the depth, then break for patches, trenches.

● SAVE TIME
● SAVE MATERIAL
● NO ROUGH EDGES

Experience Proves A Concrete Saw Must Have These Clipper Features

1. Clipper "No Bind" Floating Three Point Suspension Automatically protects blade.

2. Positive Screw Feed instant control raises or lowers blade smooth, easy.

3. Adjustable Depth Lock Set this handy stop for whatever depth desired.

4. Patented Spray Control Its value is measured in increased Blade Life.

GENUINE CLIPPER DIAMOND BLADES

Regardless of the Material you plan to Cut... Limestone, Flint, Gravel Aggregate Concrete Green or Well Cured, or Asphalt... there's a Clipper Diamond Blade to cut fast and economically.

NOW YOU CAN SAW ANYTHING

PATCH — Saw clean straight lines, break smooth — Size and shape make no difference

TRENCH — Gas, Water, Sewer, Electric, Telephone, new installations or old ones repaired

CONTRACTION JOINTS — Highways, Streets, or Building Floors precision cuts eliminate hand tooling

DRIVES—WALKS — Prove the job can be small and still make concrete sawing profitable

SOLD ONLY DIRECT FROM CLIPPER FACTORY BRANCHES

Clipper "SAILS RIGHT THRU" NATION-WIDE DIRECT FACTORY SERVICE
MANUFACTURING CO.
KANSAS CITY 8, MISSOURI
Cable Address: CLIPPER K. C. Mo.
ST. LOUIS • PHILADELPHIA • WASHINGTON, D. C. • PITTSBURGH
SAN FRANCISCO • DETROIT • CLEVELAND • ATLANTA • BOSTON
NEW YORK • HOUSTON • AUSTIN, TEX. • CHICAGO • CINCINNATI

FREE TRIAL
You Can Test—Actually Try A Clipper Concrete Saw On Your Job Without Obligation. It's Your Guarantee Of Perfect Performance.
MAIL COUPON NOW... for full details on..... FREE TRIAL

CLIPPER MANUFACTURING CO.
CONCRETE SAW DIVISION
2803 S.W. Warwick • Kansas City 8, Mo.
Send FREE—literature, information, and prices on the NEW—CLIPPER CONCRETE SAWS 3C
NAME _____
COMPANY _____
STREET _____
CITY _____ STATE _____

The Mall Smooth-Cut electric chain saw is designed to cut structural timbers too large for circular power saws.

Electric Chain Saw Cuts Large Timbers

A new type of electric chain saw for cutting large structural timbers has been developed by Mall Tool Co., 7726 S. Chicago Ave., Chicago 19, Ill. The thin chain guide and narrow toothed chain are said to make smooth and precise finish cuts for jointing beams and supports.

The Model 11E18 weighs 20 pounds and can be used by one man. For cutting sharp angles, a helper's handle can be attached. The saw has an 18-inch cutting bar, and operates from a portable generator. With extension cords, it can be run over 200 feet from the power source.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 737.

An Improved Locknut

Better heat-treating facilities have made possible improvements in the retainer ring of its locknut, announces The Security Locknut Corp., North and 15th Aves., Melrose Park, Ill. The elliptical ring, which is an integral part of the nut, is said to assure a better lock when the nut is wrenched into position.

The Security locknut makes possible positive locking, exact nut adjustment, and improved speed of application, according to the company. It consists of a standard steel nut and a slightly elliptical retainer ring in a single unit, and when applied it can be used as a replacement for a standard nonlocking type of nut.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 748.

New Hand Calculator

A portable calculator that will add, subtract, multiply, divide, figure square roots, factors, cubes, and percentages is available from the Curta Calculator Co., 5543 S. Ashland Ave., Chicago, Ill. It weighs 8 ounces and is said to be as easy to operate as a slide rule. The Curta carries to five decimal places and totals to 99 billion. Figures can be checked and rechecked on three sets of dials. It comes with a rubber-lined metal case.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 780.

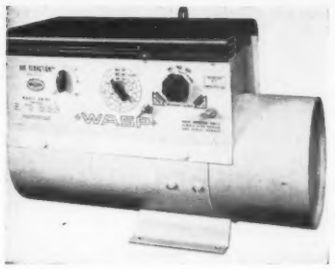
The Curta calculator adds, subtracts, multiplies, divides, and figures square roots, factors, cubes, and percentages.

Ingalls Promotes Matthews

Kenneth L. Matthews has been appointed District Sales Engineer in Chicago for The Ingalls Iron Works Co., Birmingham, Ala. Mr. Matthews, who has been with Ingalls since 1930, became Manager of the Estimating Department in 1940—a post which he filled until his present appointment.

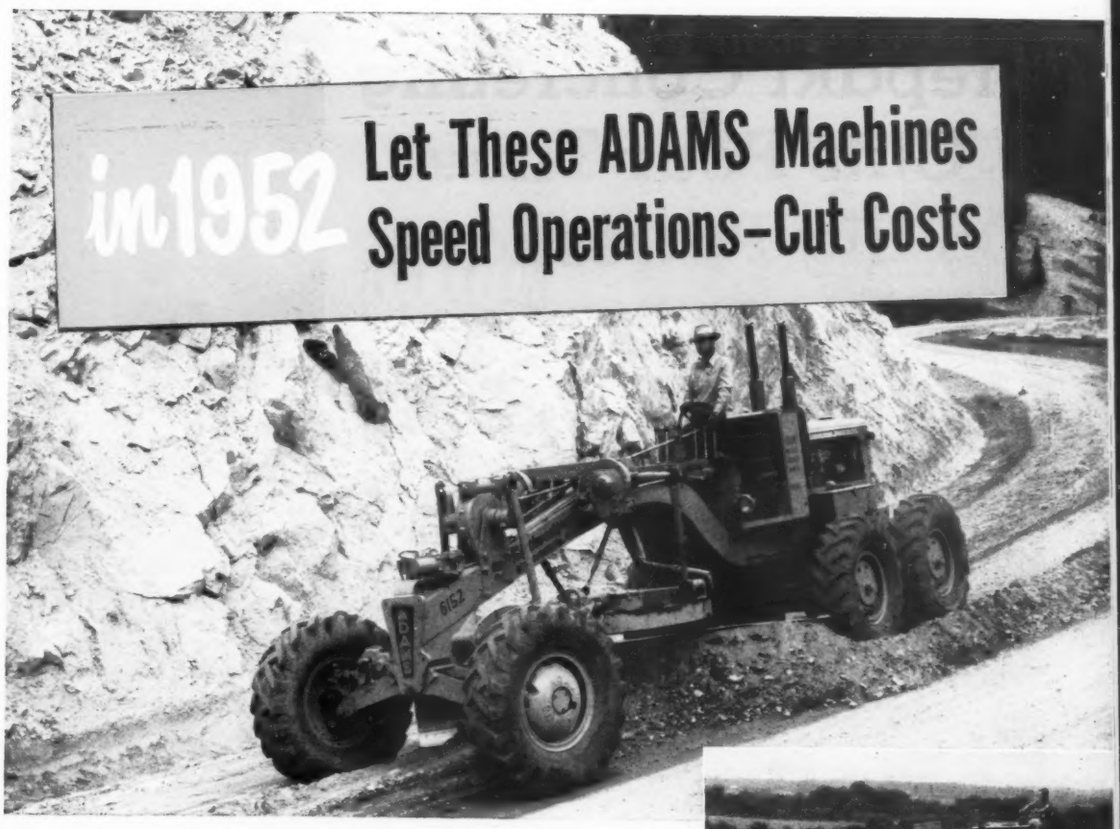
New DC Arc Welders

Direct-current arc welders in 150 and 200-amp sizes are announced by Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y. The GA Wasp is especially designed for dc straight-polarity Heliwelding with Thor-Tung. The company claims that excellent commutation at all settings, plus self-excitation and split-pole cross-field design, provides good operation at all current settings. Continuous overlap from each current range to the next gives a wide unbroken range of welding current—30 to 250 on the 200-amp welder and 20 to 185 on the 150-amp machine. Mounted on a 2-wheeled carriage, the Wasps are portable and occupy small floor space.



GA Wasp dc arc welders come in 150 and 200-amp sizes. They provide continuous overlap from each current range to the next. Units are portable.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 704.



Adams Pull-Type Graders—Most complete and up-to-da line on the market. Available in 8, 10 or 12 ft. blade sizes power or hand controlled—with or without scarifier.

Here's a real time-saving, money-saving clue for '52 . . . For highest production—at lowest cost—you can't beat the world-famous, now better-than-ever, Adams line.

Adams Motor Graders, for example, are unequalled for performance-ability, long-life dependability and economy of operation and maintenance. Available in several popular sizes, all Adams Motor Graders, from largest to smallest, offer such outstanding advantages as *8 Overlapping Forward Speeds* • *High-Arch Front Axle* • *Positive Mechanical Controls* • *Wide Range of Blade Adjustments* • and many others.

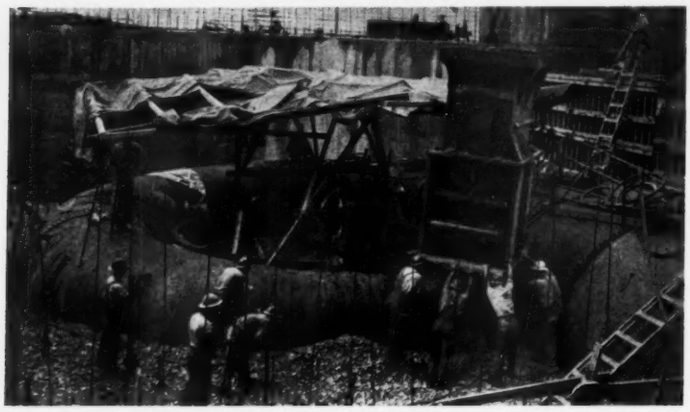
You'll find Adams Pull-Type Graders and TraveLoaders equally outstanding—the most efficient and dependable machines your money can buy. Let your local dealer demonstrate how this great Adams team can cut costs and increase profits for you in '52.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, INDIANA

Adams TraveLoader—High-speed, self-propelled, bel type machine. Picks up and loads any kind of windrowed ma terial. Has many unusual features not found in other loader

Adams

Motor Graders TraveLoaders Pull-Type Graders



First stage in the Prepakt method consisted of bedding the snail-like scrollcases halfway up in coarse rock particles which originated in the Bull Shoals quarry.

Prepakt Concreting Cuts Pour Time On Big Powerhouse

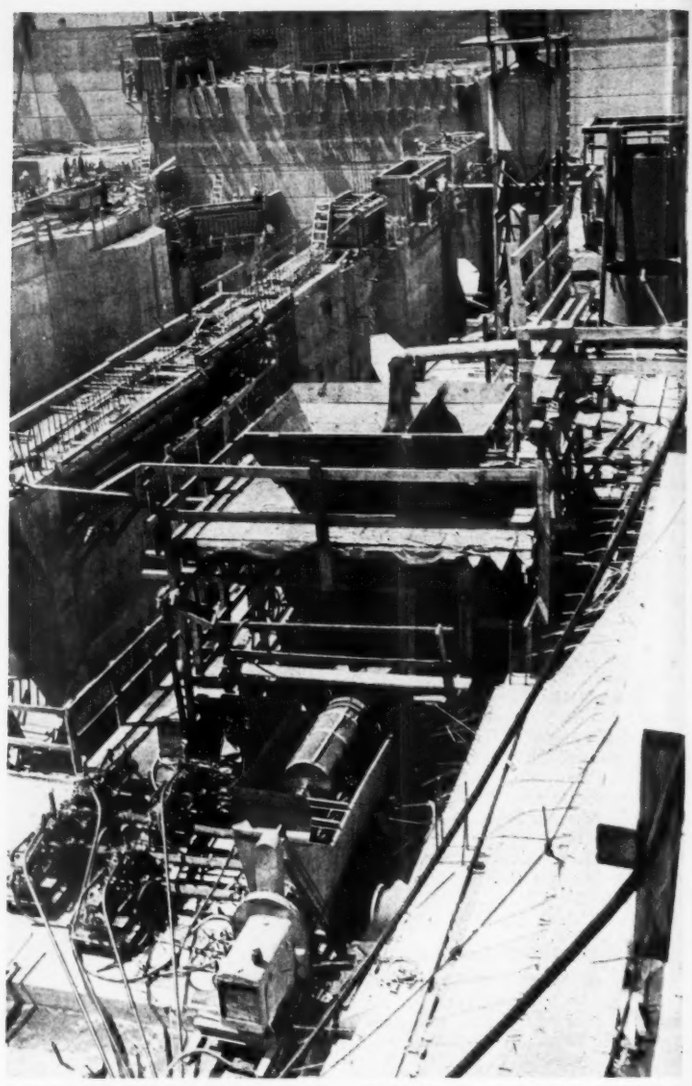
Forty Pours Reduced to Two for Each Turbine Scrollcase at Bull Shoals Powerhouse

By ROBERT E. NEBEL,
Field Engineer
Ozark Dam Constructors
With RAYMOND P. DAY

• BY discarding conventional methods and inaugurating the use of Prepakt concrete to encase draft tubes and scrollcases at the Bull Shoals Powerhouse, near Mountain Home, Ark., Ozark Dam Constructors and the Army Corps of Engineers have shaved weeks off the time schedule. What was originally intended for 40 separate pours was cut to 2. The job was one of the most significant of last year, for according to project officials, it points the way toward a time-cutting technique on hydroelectric installations.

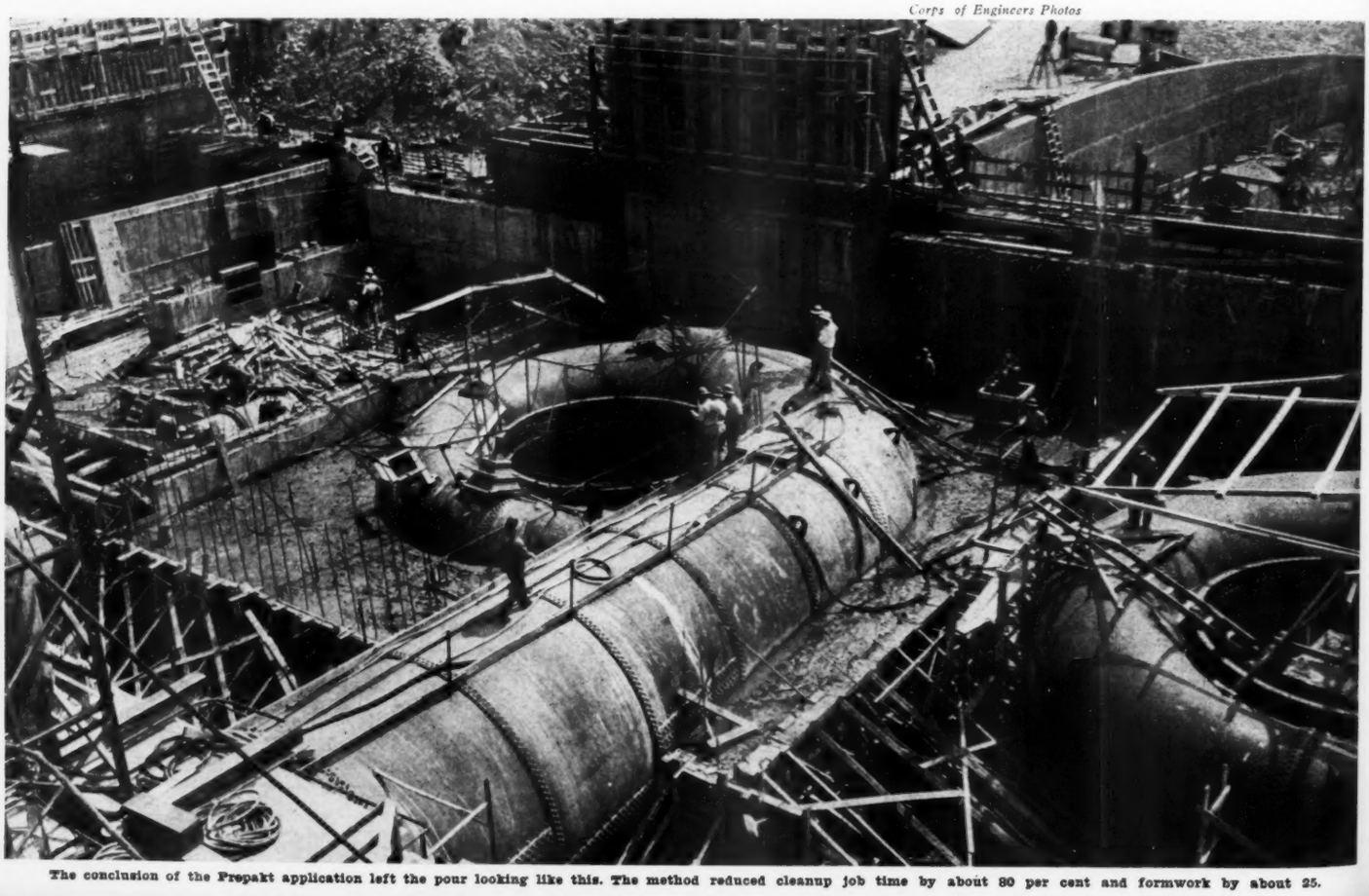
Work started at Bull Shoals back in June, 1947, when Ozark Dam Constructors moved in to start construction of the dam. By December, 1950, the giant 2,256-foot-long concrete barrier had risen almost to its final 280-foot height above bedrock, and work began on the powerhouse. Power is expected to be placed on the line and the entire project completed by late this year.

(Continued on next page)



Fine cement mortar to fill the voids in the rock during the second stage was dry-batched in the contractor's Johnson plant, then mixed, agitated, and pumped from this Prepakt Co. plant set up on a ledge of the dam.

Corps of Engineers Photos



The conclusion of the Prepakt application left the pour looking like this. The method reduced cleanup job time by about 80 per cent and formwork by about 25.

The powerhouse is being constructed for an ultimate total of 8 turbines and generators, each with a capacity of 70,000 hp. Four of these units are now being installed, with the remaining four to be placed some time in the indefinite future. Including the 7,840 cubic yards of Prepakt concrete, there will be some 67,000 cubic yards of concrete in the powerhouse proper.

Number of Pours Cut

Originally, the Corps of Engineers specifications for placing concrete around the scrollcases called for 2-foot lifts, with construction joints along the center line of the units in each direction. Between successive lifts, a 72-hour time interval had been specified. Had the concrete been placed under this conventional system, 40 separate pours would have been required to place 1,960 cubic yards of concrete around each unit.

The concrete portion to be placed for each hydroelectric unit covered an area 54 feet along the axis of the dam and 60.5 feet parallel to the draft-tube center lines. In depth, the encasement blocks measured from 21 to 23 feet.

The use of Prepakt concrete reduced these 40 possible pours to 2, both approximately equal in depth. The bottom pour extended to the halfway point in the scrollcase depth, or from elevations 452 and 454 to 463. The upper portion then extended from elevation 463 to the floor at the top of the turbine-pit liner at elevation 475.

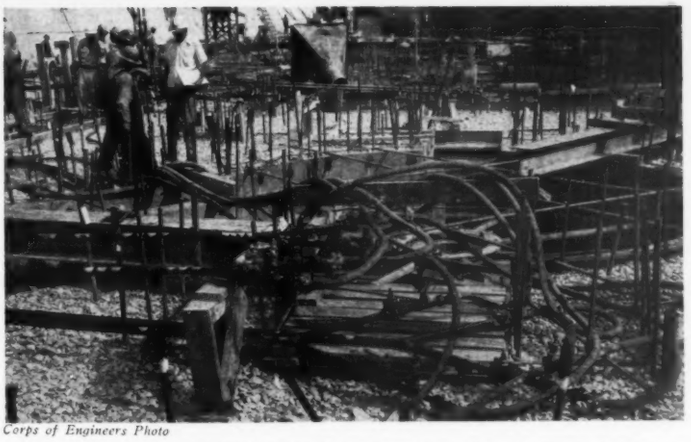
Of special interest to Ozark Dam Constructors was the fact that this reduction in the number of pours eliminated roughly 80 per cent of the job cleanup—one of the most expensive items for concreting—and reduced formwork by roughly 25 per cent. Also, there was a saving in time required to place that amount of concrete.

Preparing for the Pours

Forms presented no special problems, except that two important factors had to be kept in mind when they were designed. First, the grout of Prepakt concrete did not set up as rapidly as standard concrete, and a full hydraulic head had to be used for design purposes. This meant a slightly heavier form with stronger ties. Second, the forms had to be grout-tight, so center match sheathing was employed.

The Prepakt method consists basically of placing coarse rock particles in the forms, and filling the interstices with fine cement mortar and an intrusion aid. Coarse aggregate for the initial part of the different pours originated in the Bull Shoals rock quarry near Flippin, Ark., and was transported 7 miles to the site by the rubber-conveyor system feeding the aggregate plant at the dam. From the storage piles at the classification plant at the dam, the rock was moved by conveyor belt through the main Johnson concrete-mixing plant to buckets on the concrete trains. As the material moved through the plant it was weighed and recorded.

So far as any concrete mixture was concerned, the plant played no part—except for the fact that it was set up so the aggregate had to pass through the weighing mechanism to reach the trains.



Corps of Engineers Photo

The valves in the foreground controlled the grout flow down into the aggregate.

The concrete trains consisted of six 10-ton locomotives built on the project from Caterpillar engines and G-E motors, with 5-stall concrete cars. For transporting the Prepakt aggregate, four air-operated 4-yard Blaw-Knox concrete buckets were used. The trains delivered the loaded buckets to a hoisting point over the powerhouse, where either a Colby 300-foot double-cantilever rig, an American Revolver, or a Washington revolving crane could place the rock in the powerhouse area. From that point, two different procedures were used as follows:

First, a special method was devised to place the rock up under the scrollcases. The cranes put it into two 4-yard storage hoppers located in the powerhouse. From this storage or transfer point the aggregate went to a 1-yard bucket, which in turn was moved by one of the cranes to a "blower" in the pour. The blower consisted of a 2-yard hopper with an 8-inch discharge line bent to curve under the scrollcase, but attached to this line was a 1½-inch air pipe which was equal to the job of blowing the 1½-inch rock up under the scrollcase.

(Continued on next page)

MM MINNEAPOLIS-MOLINE MODERN MACHINERY Wheelers

3 LOADS for 2

...with 6 shuttle speeds

A demonstration will convince you!

MM WHEELERS Load Faster...Dig Better!

MM exclusive UTIL shuttle gear gives instant reversing of all 6 speeds—offers you foremost value in modern high-speed tractor loading and dozing. All tractor and engine parts are larger . . . more durable and are completely built in MM plants. This results in reduced cost of MM Wheelers for their weight and capacity, plus the assurance of exacting quality control. Heavy-duty design and conservative power rating at low engine speeds permit continuous full load operation in any gear . . . added capacity without over-loading!

Exclusive Down Power Digging!

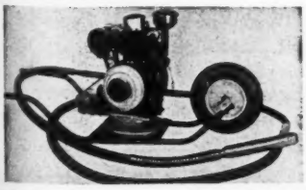
MM Wheeler-Loaders have extra large double-acting hydraulic cylinders and bucket control that permits *successful* subsurface digging. Solid saddle mounting of loader on built-in mounting pads and hydraulic down pressure permits powerful bucket crowding action and increases traction on rear driving wheels. Accurate bucket control also permits carrying a grade. Attaching equipment for MM Wheelers is expressly engineered to produce a *complete operating unit and finest, single-package performance!*

Compare MM Features

- MM high turbulence engine.
- UTIL 6 speed *shuttle gear.*
- MM exclusive front wheels and axle design.
- Heavy-duty final drive enclosed in transmission.

MINNEAPOLIS-MOLINE MINNEAPOLIS 1, MINNESOTA

ROETH



CONCRETE VIBRATORS
MOUNTED ON WHEELBARROW CHASSIS
Write for details and prices
ROETH VIBRATOR CO.
1737 Farragut Ave., Chicago 40, Ill.

Pouring Time Cut On Big Powerhouse

(Continued from preceding page)

For the outer portion of the pour away from the scrollcase proper, the rock was placed directly from the buckets as they came off the trains. Under the scrollcase all the rock was ¾ to 1½-inch, but in the outer portion ¾ to 6-inch material went in, scientifically designed to leave the minimum amount of voids.

Workmen soon learned that a bit more care was needed in the upper part of each unit, because numerous embedded items were included in the encasement and the rock had to be worked around each one. The aggregate was placed to the elevation of a recess for electrical conduits, for example; the recess blockout form was then inserted; and the rock placement continued. A mat of slab reinforcing steel was placed on the rock near the top of the pour, and the required cover of 1½-inch aggregate put on top. Embedded pipe was supported by jack pipe during the rocking.

The grout risers consisted of 1-inch pipe made up in three sections, threaded and coupled, each section approximately 5 feet long. This gave enough length so the pipe would protrude about 3 feet above the top of the pours. Risers were spaced at 5-foot centers as nearly as possible. In addition to these, 18 pipes extended through the speed ring for grouting directly under the scrollcase. The total number of grout risers averaged about 140 per pour.

The risers and sounding wells were both held in place by the rock. Thirty sounding wells were used at random points in each pour to determine the depth of grout at various locations at any time during the grouting process. These wells consisted of 1¼-inch pipe the depth of the pour, with a series of slots cut in them for the grout to enter. The depth was measured, therefore, simply by inserting a rod in the well. After the pours were completed the wells were burned off at the level of the top of the pour, and the pipe remained embedded.

Mortar Mixing

Mortar to fill the voids in the rock aggregate was batched at the Ozark Dam Constructors' Johnson plant on the right abutment. The mortar consisted of a blend of Type II low-hydrating-heat cement, sand with a fineness modulus of 1.4 to 1.7, and Alfesil—a Concrete Chemicals Co. product similar to fly ash, which acted as a mineral filler.

Three different mixes were used for the 8 pours, proportioned as follows:

Sand in Parts	Alfesil in Parts	Cement in Parts
5	1.5	2
3.5	1	1
4.5	1	1.9

Required strength of the mix was 2,500 psi in 28 days. It should be remembered that this was for mass concrete, so the mix favored the sand, consequently giving a lower strength than would most likely be required on another type of job.

The dry mix, according to the above formulas, was then transferred by way of the same route as the aggregates (mixer, concrete-train buckets, and cranes) to the Prepakt plant located on a dam ledge which ties into the powerhouse turbine floor. At this point, 50-degree water for the grout was placed in the mixer, followed by an intrusion aid and then the dry mix as previously detailed. The water was cooled at the main batch plant and pumped to the Prepakt plant.

This sequence of placing the ingredients in the mixer proved most satisfactory, because the intrusion aid seemed to be dispersed better through the mix when this pattern was followed. According to officials of Concrete Chemicals Co., producer of the intrusion aid, it gives the concrete a nonshrink effect, acts as a fluidifier in moving the mix through grout lines, keeps the sand in suspension, and forms a better bond between grout and aggregate.

To make a 40-cubic-foot grout batch, the following ingredients were used at the Prepakt plant:

Cement	1,000 lbs.
Alfesil	750 lbs.
Intrusion aid	17.4 lbs.
Water	910 lbs.
Sand	2,500 lbs.

Rock voids averaged approximately 40 per cent of the total volume.

The Prepakt Plant

The Prepakt Co. plant consisted of a mixer, agitator, pumps, and lines. The mixer was manufactured by the Transit Mixer Co. of St. Louis, Mo., and consisted of two 2-yard bowls. The mixer discharged into an agitator, which was a Prepakt-built machine of 3-yard capacity. There were four grout pumps to handle the mortar through the 1¼-inch lines to the pour. A wye was attached to the end of the four grout lines, giving eight flexible leads to take off toward the grout risers. Control of flow was managed by valves, one at the end of each flexible line and one on each feeder line on the mixer side of the wye.

Pumping Procedure

To cool the aggregate, 50-degree water was first flushed through the piping system to the risers. This initial action flooded the pours approximately 5 feet deep before any grout was pumped. When the grout was started, it forced the water up through the rock as it rose toward the top of the forms. The excess water was then picked up and trained away through a collector system.

In general, the outer portion of the pour was pumped first. This was done for a purpose. Later on, when grout was pumped in close to the scrollcases, the grout was confined by the previously placed grout on one side and the scrollcase metal on the other. The temperature of the concrete in place averaged 70 to 72 degrees.

As the grout was pumped, the risers

(Concluded on next page)

Check these Important Points . . .

1. **POSITIVE FORCED EJECTION** with rate of ejection always under control.
2. **POSITIVE EJECTOR GATE RETURN.** Heavy springs return gate to digging position.
3. **EXTRA LARGE APRON OPENING.** Full 78″ for positive ejection of any material.
4. **SLIDING SHEAVE BLOCKS** are on center-line of scraper for longer cable life.
5. **NO APRON SHEAVES IN DIRT.** Twin cable lines run to apron equalizing hook.
6. **POWER TONGUE LIFT.** Tongue lifted by cable control unit for hitching scraper to tractor.
7. **REVERSIBLE CUTTING EDGE,** bowed 3-piece, for easy, fast digging and maximum economy.
8. **DOUBLE BOTTOM,** integral with bowl. All-welded for maximum strength and rigidity.
9. **WIDE PUSHER BUMPER,** so that tractor need not be accurately positioned when pushing.
10. **3 OPTIONAL TIRE SIZES.** To meet all flotation needs and give maximum utility.

Each Point Helps You to Increase Production!

GAR WOOD INDUSTRIES

NO. 522

were pulled up, but the bottom of each was always maintained a minimum of 2 feet below the grout level. For vibration, compressed-air chipping hammers were fastened externally to the forms. The bottom pour, consisting of 840 cubic yards for each unit, required an average of 13½ hours to grout. The top pour, averaging 1,120 cubic yards, required 20 hours of continuous grouting. The concrete in all cases was at least 16 hours old before it attained enough strength for a man to walk on the surface.

A Multiple-Purpose Structure

The Bull Shoals dam and powerplant project is expected to have multiple-purpose uses. Designed primarily for the control of flood runoff from the White River, which it bridges, Bull Shoals Dam will also back up an 87-mile lake, holding 5,408,000 acre-feet at full capacity, for the generation of hydroelectric power. The upper portion of the reservoir for the first 41 feet of its depth will be used specifically for the regulation of floods. The remaining storage will furnish power and such incidental benefits as the improvement of recreation and the protection of wildlife.

Eight penstocks, each 18 feet in diameter with 19 x 26-foot gates, were installed through the dam, leading to the powerhouse. Through these penstocks will flow the water which will operate four 13-foot-diameter turbine wheels for the present, and eight in the future.

Personnel

Field supervision for Ozark Dam Constructors was under the able hand of M. H. Slocum, with E. C. Shipp and Pope Schoenberger as Powerhouse Superintendents. The Prepakt Co. was represented by John King, Chief Engineer, and Robert Moorhead, Project Manager. For the Corps of Engineers, John Kemple was Resident Engineer and Don Basgen was Chief Inspector.

The $40,000,000 Bull Shoals project has been built in its entirety by Ozark Dam Constructors, a joint-venture group composed of nine contractors. These firms are: Brown & Root, Inc., of Houston, Texas, sponsor; Martin Wunderlich Co. of Omaha; Winston Bros. Co. of Minneapolis; Peter Kiewit Sons' Co. of Omaha; Gordon Construction Co. of Denver; Condon-Cunningham Co. of Omaha; Morrison-Knudsen Co., Inc., of Boise, Idaho; J. C. Maguire of Los Angeles; and Charles H. Tompkins Co. of Washington, D. C.

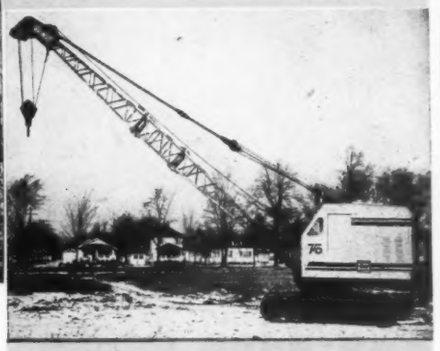
Look at the w-i-d-t-h of the 625! The wide, curved cutting-edge lets you use your power where it counts — to cut and load. Less power is used to move material back in pan. *Result:* Loads in minimum time and distance with less tractive effort . . . Live boiling action into both bowl and apron gives full heaping load every trip — reduces cost per yard . . . Forced ejection with exceptionally large apron opening gives faster dumping and controlled spreading, with rate closely controlled by operator . . . Other GAR WOOD scrapers in 20, 14 and 12 cu. yd. heaped capacity.

GAR WOOD INDUSTRIES, INC.
PLAY DIVISION • EXECUTIVE OFFICES • WAYNE, MICHIGAN

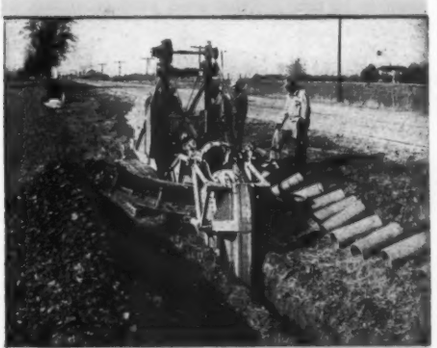
Construction Equipment: *Excavators, Scrapers, Dozers, Ditchers, Spreaders, Finegraders, Truck-mounted Road Graders.* Truck Equipment: *Dump Truck Bodies & Hoists, Winches & Cranes, Refuse Collection Bodies, Elevating End Gates.*

OTHER GarWood EQUIPMENT

GAR WOOD DOZERS — TipDozers and Dozecasters in 12 new models. Your choice of either cable or hydraulic controls.



GAR WOOD EXCAVATORS — New ¾ yd. crane-shovels, crawler and truck mounted. All operating conversions available.



BUCKEYE DITCHERS — A complete line of wheel and ladder type ditchers. Also Finegraders, Spreaders and Hi-Way Widener.

Rigid-Frame Formulas

One of the most highly regarded handbooks on indeterminate structural analysis, Kleinlogel's "Rahmenformeln", has now been translated into English and is available as the new revised and enlarged "Rigid Frame Formulas". The 480-page book lists explicit formulas of all statical quantities for single-panel frames in steel, reinforced-concrete, and timber construction.

General and special loadings on 114 rigid-frame shapes are illlustrated with 1,643 figures. Reaction, shear, and moment formulas are given for rectangular, triangular, and many types of irregular shapes. These formulas can be used by beginners for direct substitution on simple problems, and by more experienced designers for computing displacements and simplifying highly indeterminate frames.

Kleinlogel's translated book of reliable, compact, easy-to-find formulas should receive wide acclaim from structural designers. Priced at $10.00, it can be purchased from Frederick Ungar Publishing Co., 105 E. 24th St., New York, N. Y.

Excavating Men Get Awards

The Republic National Bank of Dallas now under construction in Dallas, Texas, is a huge 40-floor affair, and in order to build the foundations, it was necessary to remove more than 85,000 cubic yards of rock. (See C. & E. M., Sept., 1951, pg. 81.) In recognition of this excavation project—during which about 100,000 sticks of dynamite were used, but no lost-time accidents occurred—Fred Florence, President of the Bank, honored 44 members of the excavating crew by awarding them certificates of merit.

The ceremony took place on February 19 in the Spectators' Gallery on the building site. Mr. Florence, in presenting the certificates, said: "In token of our appreciation, we would like to present each of you with a Certificate of Merit. This is more than a piece of paper; it is a symbol of your industry and loyalty to your job. Certainly you must realize that no project as large as this could have been accomplished without your wholehearted efforts—without the know-how which each of you has put into your individual jobs. You have performed well."

Vilbig Bros. subbed the foundation excavation from J. W. Bateson & Co., prime contractor.

Data on Fabricated Forms

A 40-page illustrated catalog shows Atlas fabricated forms in use on practically every type of poured-concrete work. Photos of actual construction jobs show how the narrow steel forms are made into a number of panel shapes. Lengths from 4 to 10 feet with widths of 6 or 8 inches are used for flat work and right-angle sections for corners. Special forms are made for pouring architectural concrete, bridge railings, tunnels, and dams.

This literature may be obtained from the Irvington Form & Tank Corp., 20 Vesey St., New York 7, N. Y. Or use the Card at page 16. Circle No. 815.

Lull Mfg. Co. Executives

Pat Lamb is the newly appointed Assistant Manager of the Lull Mfg. Co., Minneapolis, Minn., manufacturer of the Shoveloader, Traveloader, and other materials-handling equipment. A. L. Stains succeeds Mr. Lamb as District Manager in the western states and western Canada.

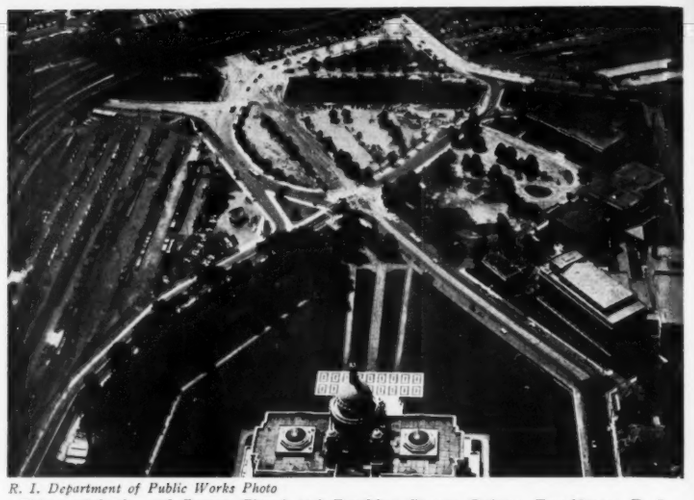
Special Plant-Mix Laid Around Trees

Asphaltic Concrete Designed to Allow Water to Percolate To Roots of Trees in Downtown Municipal Parking Lot

• TRAFFIC jams in downtown Providence, R. I., should be eased to a marked degree by the new Gaspee Street and Pershing Square Rotary that embodies in its design a municipal parking lot with ultimate accommodations for 325 vehicles. Raised islands paved with blacktop separate the strings of parked cars. And growing out of the blacktop are rows of trees! To insure the continued growth of these trees, the pavement consists of a specially designed asphaltic concrete that permits vital moisture to percolate through the mix to the roots.

The combined traffic rotary and parking lot is a project financed by city, state, and Federal funds. The part around the perimeter of the lot, carrying both state and Federal traffic routes, is built by the Rhode Island Department of Public Works and the Federal government. Within the rotary the cost is borne by the city of Providence and the State Department of Public Works.

The project was designed by Knappen Tippetts Abbett Engineering Co. of New York City, and is being constructed by Campanella & Cardi Construction Co. of Warwick, R. I. Work got under way in October, 1950, and a portion of the parking lot was ready for use the following September. But because of the steel shortage, a key bridge carrying Gaspee Street over the Woonasquatucket River was delayed in its construction. The entire improvement is expected to be finished early this year. Total estimated cost is around $500,000.



R. I. Department of Public Works Photo

This aerial view of Gaspee Street and Pershing Square Rotary, Providence, R. I., shows the new municipal parking ground divided by the river. In the foreground is the State House; in the background are Union Station and N. Y., N. H. & H. tracks.

Close to Shopping District

Located in the shadow of the white marble dome of the State House, the parking lot is within a short walking distance of the central shopping district of the city. The heart of downtown Providence, second-largest city in New England, lies 1,200 feet across the main-line tracks of the New York, New Haven & Hartford Railroad. Two underpasses handle the flow of traffic back and forth beneath the tracks at this point. The Woonasquatucket River divides the parking lot into two segments before it channels under the railroad just east of the Union Station.

The northern part of the parking area, accommodating 192 cars, was completed first. The remaining section of the lot, on the other side of the river, could not be finished until the new bridge was constructed. The steel and concrete structure is immediately downstream of the old wooden span which is being replaced. Its construction will eliminate a sharp-angle turn on Gaspee Street and will improve the alignment on the way to the underpass.

Length of the project is 0.65 mile. Pavements are either 44 or 48 feet wide and consist of a cement-concrete base course 8 inches thick, topped by a 3-inch sheet-asphalt pavement. Eventually rows of bushes planted around the periphery of the lot will screen the parked cars from the streets. To help

(Concluded on next page)

These pictures of a storage yard show how easy it is to overlook valuable scrap.

You lose when scrap plays Hide-and-Seek

It doesn't look as though much scrap is in this storage yard, does it? But let's look closer, beneath the weeds. Tons of valuable iron and steel scrap are hidden here.

Could this be true of *your* storage yard?

If so, there are two good reasons why you should gather up this worn-out iron and steel equipment and call your scrap dealer *immediately*. Most important, steel mills are in desperate need of scrap. Unless much more scrap is turned in there is danger that steel production may be cut in the months to come. And our nation's defense program may suffer through the steel shortage.

The high price of scrap is another good reason. You get more actual cash by selling now.

Take these two simple steps: Survey your storage yards for worn-out iron and steel parts and equipment; then call your local scrap dealer. But don't stop here. Make plans now to establish a regular scrap collection program.

ARMCO STEEL CORPORATION

1962 CURTIS STREET, MIDDLETOWN, OHIO • PLANTS AND SALES OFFICES FROM COAST TO COAST • EXPORT: THE ARMCO INTERNATIONAL CORPORATION

ARMCO

USE RIGHT BUCKET FOR THE JOB

Hayward makes all three — clamshell, electric motor, orange peel. A Hayward recommendation is unbiased.

Trade HAYCO Mark

THE HAYWARD CO.,
32-36 Dey St., New York

Hayward Buckets

pedestrians cross the streets encircling the lot, pushbuttons that will stop the flow of traffic with a red light have been installed at the crossing lanes.

Saving the Trees

Originally, part of the site of the improvement was occupied by a commercial parking field and some commercial holdings. When the clearing and grading for the rotary were finished, 24 trees were still in place, and these were retained in the landscaping plan. Raised islands separating the rows of parked cars were laid out so as to include the existing trees. In addition 38 more trees were planted in the islands. Hydrants were also installed at convenient locations in these islands so that water for the trees would be available.

Asphaltic concrete, averaging 2 inches in depth, was laid in the islands, leaving only small circular openings around the base of each tree. For an average 6-inch tree, the opening was about 12 inches in diameter, affording only 3 inches of space between the trunk and the pavement. Obviously this opening wasn't big enough to admit all the water the tree would need, but the specially designed plant-mix, containing about 15 per cent of voids, permitted at least 80 per cent of rainfall to percolate through the pavement into the ground, thus reaching the entire root area.

Designed in the Materials Laboratory of the State Department of Public Works, the mix passed a test whereby 500 cc of water percolated through a 5-inch-diameter ring of the material in 8½ seconds. Shortly after some of it was laid, the elements gave the mix a practical test with gratifying results. Heavy downpours of rain soaked the Pershing Square Rotary for hours, but after they stopped, no rain remained on the pavement. It had gone through to the ground.

The Mix

Despite more voids than are usually found in such courses, the mix is expected to wear well. It is made up of crushed-stone aggregate, sand, and asphalt having a penetration of 60-70. The percentages of each are given in the following table:

Material	Per Cent
⅝-inch to ¼-inch crushed stone	15.5
¼-inch to No. 10 crushed stone	60.5
Sand	20.0
Asphalt, 60-70 penetration	4.0
Total	100.0

The hot-mix was spread by hand with rakes and shovels at an average temperature of around 300 degrees F. After it had cooled somewhat, it was compacted lightly with a 500-pound hand roller and the edges along the curb were compacted a little more firmly with hand tampers. This was followed by another rolling with a ¾-ton power roller that erased any irregularities left by the hand work.

Parking in the lot is regulated by meters that are operative from 6 a. m. to 6 p. m. daily except Sundays and holidays. The rates are one nickel for two hours; two nickels for three hours; and three nickels for four hours, which is the limit allowed for uninterrupted parking.

Personnel

The Rhode Island Department of Public Works, sponsor of the new facility, is headed by Philip S. Mancini, Director, with George H. Henderson, Principal Highway Engineer. The design and construction were supervised respectively by Frederick W. Hauck, Road Designing Engineer, and Lee V. Spencer, Road Construction Engineer. The special mix was worked out by Anthony R. Healy, Materials Engineer, and John H. Byrne, his assistant. Bill Cole was Resident Engineer on the project.

C. & E. M. Photo

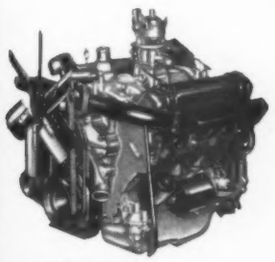
A transplanted tree in the Pershing Square Rotary. Specially porous blacktop paving surrounds it.

C. & E. M. Photo

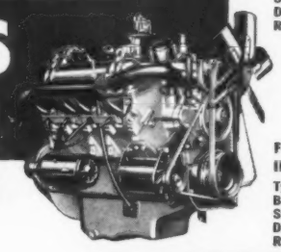
John H. Byrne (left), Assistant Materials Engineer, and Resident Engineer Bill Cole check the space around the base of a tree.

FORD ANNOUNCES THREE NEW Heavy Duty INDUSTRIAL ENGINES

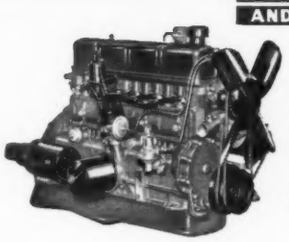
Ford INDUSTRIAL ENGINES AND POWER UNITS



FORD "317" INDUSTRIAL ENGINE
Type—V-8, 90° Overhead Valve.
Bore—3.8 inches.
Stroke—3.5 inches.
Displacement—317 cu. in.
Rating (dyn.)—140 b.h.p. @ 2800 rpm.



FORD "279" INDUSTRIAL ENGINE
Type—V-8, 90° Overhead Valve.
Bore—3.56 inches.
Stroke—3.5 inches.
Displacement—279 cu. in.
Rating (dyn.)—125 b.h.p. @ 2800 rpm.



FORD "215" INDUSTRIAL ENGINE
Type—6 cylinder Overhead Valve.
Bore—3.56 inches.
Stroke—3.6 inches.
Displacement—215 cu. in.
Rating (dyn.)—93 b.h.p. @ 2800 rpm.

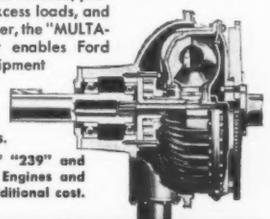
Designed and Built for INDUSTRIAL APPLICATIONS

● Now, manufacturers and users of industrial powered equipment have a choice of six great Ford engines . . . all especially designed for industrial applications and incorporating notable advancements for still greater performance and operating economy. With the three new series pictured here and three series in the present line, there is a choice of six engines ranging from 120 to 317 cu. in. displacement.

Our experienced Sales Engineers are at your service in developing engineering recommendations for the most efficient use of Ford Industrial Power in your application.

AND A NEW MULTA-TORQUE CONVERTER

The new Ford "MULTA-TORQUE" Converter offers all the advantages of fluid coupling PLUS torque multiplication. Designed to absorb shock loads, prevent stalling under excess loads, and start bigger loads faster, the "MULTA-TORQUE" Converter enables Ford Engines to power equipment normally requiring much larger, more costly engines in the same applications.



Available with "215," "239" and "254" Ford Industrial Engines and Power Units at low additional cost.

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED

All six engines in the 1952 Ford Line are available as assemblies or complete Power Units, closed or open type.

Ford Industrial Engines and Power Units are RIGHT 3 WAYS for your job!

1. **RIGHT POWER** for your job—six great engines available in both Power Units and Engine Assemblies.
2. **RIGHT FEATURES**—all the latest advancements of Ford's famed progressive engineering.
3. **RIGHT SERVICE**—Ford Industrial Engine Service is **Nationwide.** Parts obtainable quickly from your nearest Ford Dealer.

MAIL THIS COUPON TODAY!

INDUSTRIAL ENGINE DEPARTMENT
FORD MOTOR COMPANY
15050 Woodward Ave., Highland Park 3, Mich.

We are interested in Industrial Power for:

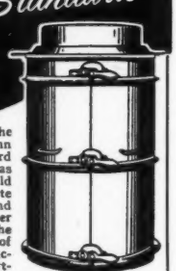
_____
(state your application)

Send us 1952 literature on Ford Industrial Engines checked below:

☐ "120" 4-Cyl. ☐ "215" 6-Cyl. ☐ "239" V-8
☐ "254" 6-Cyl. ☐ "279" V-8 ☐ "317" V-8
☐ "MULTA-TORQUE" Converter

FIRM NAME _____
(Please Print)
STREET _____
CITY _____ ZONE _____ STATE _____

THE "Quinn Standard" FOR CONCRETE PIPE



The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that Quinn pipe forms and Quinn mixing formulas combine to produce the finest concrete pipe at lowest cost.

QUINN HEAVY DUTY PIPE FORMS

For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.
WRITE TODAY. Complete information, prices, and estimates sent on request.
Also manufacturers
QUINN CONCRETE PIPE MACHINES

QUINN WIRE & IRON WORKS 1645-17ST BOONE IA

Booklet on Versatile Crane

"Busy as a Bee" is the title of a 24-page booklet put out by Bucyrus-Erie Co. and describing the all-hydraulic Hydrocrane. The more than 100 illustrations show the machine with its many attachments placing tanks and pipe; digging, trenching, and backfilling; hoisting and erecting; loading, unloading, and stockpiling; cleaning catch basins; removing snow and stumps; and cleaning up in quarries, mines, and streets.

The mobile truck-mounted machine is capable of highway speeds up to 50 mph. With a crane front-end, such attachments as magnet, ⅜-yard clamshell, ½-yard trash bucket, orange peel catch-basin bucket, 3-tine grapple, or forked grab can be put into service in a matter of minutes, the company claims. The crane front-end is convertible, in the field, to a dragshovel called the Hydrohoe.

This literature may be obtained from the Bucyrus-Erie Co., Box 56, South Milwaukee, Wis., or by using the Request Card at page 16. Circle No. 735.

Data on Nonfusion Welding

An 8-page reprint of a technical paper, "Dilution and Diffusion Aspects of Nonfusion Welding", presented before the 32nd Annual Meeting of the American Welding Society, is available from Eutectic Welding Alloys Corp., 172 St. and Northern Blvd., Flushing, N. Y. It is illustrated and documented with charts, diagrams, tables, and formula derivations.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 817.

Krey and Force Are VP's

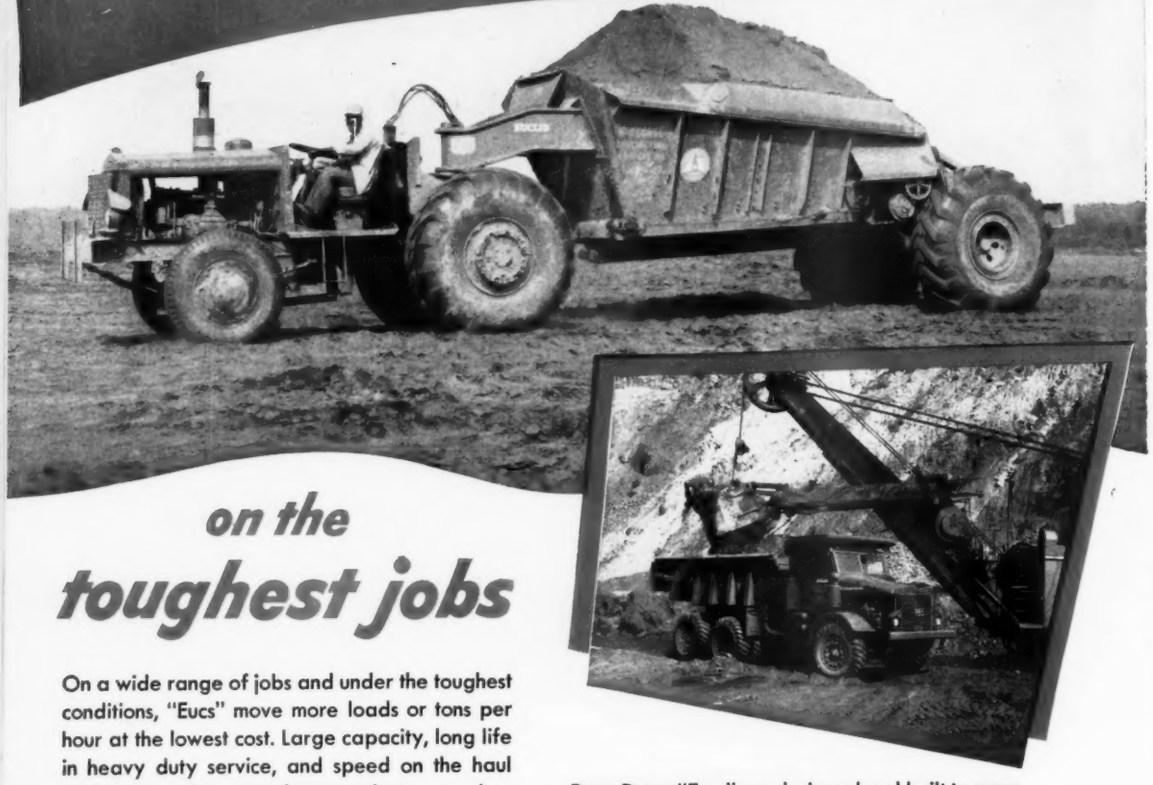
Don H. Krey is Vice President in Charge of Sales and John W. Force is Vice President in Charge of Engineering of Homestead Valve Mfg. Co., Coraopolis, Pa. Both appointments are effective for all three of the company's divisions—the valve plant, the Hypressure Jenny steam-cleaner plant, and the chemical-compounding plant in Edgeworth, Pa. Mr. Krey has been with the company for 17 years, and Mr. Force for 25.

Protective Plastic Paint

An 8-page bulletin on corrosion-resistant protective plastic paint is available from The Corrosite Corp., Chrysler Bldg., 405 Lexington Ave., New York 17, N. Y. It points out that Corrosite protects against marine atmospheres, tropical climates, chemical attack, abrasive action, salt-water corrosion, and other similar conditions. It explains how to use it for painting metals, concrete, brick, stone, plaster, and asbestos board; and it tells how to order, including sizes and colors available.

This literature may be obtained from the company by requesting Bulletin No. 201, or by using the Request Card at page 16. Circle No. 778.

Proved Performance



on the toughest jobs

On a wide range of jobs and under the toughest conditions, "Eucs" move more loads or tons per hour at the lowest cost. Large capacity, long life in heavy duty service, and speed on the haul and dump—these are features that assure low cost hauling and dependable performance.

Bottom-Dump Euclids have proved their rugged staying power and ability to do the toughest jobs in off-the-highway construction and industrial work. Powered by diesel engines of 190 to 300 h.p., they range in capacity from 13 to 25 cu. yds., and have top speeds loaded up to 34.4 m.p.h.

Rear-Dump "Eucs" are designed and built to move rock, coal, ore, overburden and other heavy excavation. They range in capacity from 10 to 34 tons, have top speeds up to 36.3 m.p.h. with full payload, and diesel engines of 125 to 400 h.p.

For help with your off-the-highway hauling problems, call your Euclid Distributor today or write for information on the complete line of Euclid equipment for moving earth, rock, coal and ore.

"EUCS" are job proved for more load per hour and more profit per load.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

EUCLIDS Move the Earth

DISTRIBUTORS

ALABAMA—Tractor & Equipment Co., Inc., 4402 First Ave. N., Birmingham 1.

ARIZONA—Lively Equipment Co., Albuquerque, New Mexico.
State Tractor & Equipment Co., 407 S. 17th Ave., Phoenix.

ARKANSAS—Euclid-Memphis Sales, Inc., Memphis 2, Tennessee.

CALIFORNIA—The Euclid Road Machinery Co., Emeryville, 339 W. Maple St., Monrovia.

COLORADO—Constructors Equipment Co., 3707 Downing St., Denver 5.

CONNECTICUT—The W. I. Clark Co., 2195 Dixwell Ave., New Haven.

DELAWARE—L. B. Smith, Inc., Camp Hill, Penna.

FLORIDA—Florida-Georgia Tractor Co., 2806 W. Beaver St., Jacksonville; 2415 State Rd., Lakeland; 3139 No. Miami Ave., Miami; 1400 S. Orange Blossom Trail, Orlando; New Quincy Highway, Tallahassee; 216 S. 12th St., Tampa.

GEORGIA—Tri-State, Inc., 880 Glenwood Ave. S.E., Atlanta 1; East Side Highway, Macon
Tri-State Tractor Co., 712-14 No. Washington St., Albany.

IDAHO—Intermountain Equipment Co., Broadway at Myrtle St., Boise; 210 No. 4th St., Pocatello.

ILLINOIS—Euclid-Chicago Co., 6027 Northwest Highway, Chicago 31.
Euclid Sales & Service, Inc., St. Louis 10, Mo.

INDIANA—Euclid-Chicago Co., Chicago 31, Illinois.
Reid-Holcomb Co., 1815 Kentucky Ave., Indianapolis 21.

IOWA—The Euclid Road Machinery Co., Hibbing, Minnesota.
Fehrs Tractor & Equipment Co., Omaha 2, Neb.

KANSAS—The G. W. Van Keppel Co., Kansas City 8, Missouri.

KENTUCKY—Euclid-Kentucky, Inc., 3900 Crittenden Drive, Louisville.

LOUISIANA—Euclid-Memphis Sales, Inc., Memphis 2, Tennessee.

MAINE—N. A. Burkitt, Inc., Route 1, R.F.D. 3, South Portland.

MARYLAND—Rish Equipment Co., Clarksburg, W. Va.
L. B. Smith, Inc., Camp Hill, Penna.

MASSACHUSETTS—Clark-Wilcox Co., 116 Western Ave., Boston 34.
The W. I. Clark Co., New Haven, Connecticut.

MICHIGAN—W. H. Anderson Co., Inc., 47 West Seven Mile Rd., Detroit 3.
The Euclid Road Machinery Co., Hibbing, Minn.

MINNESOTA—The Euclid Road Machinery Co., Highway 169 West, Hibbing.

MISSISSIPPI—Euclid-Memphis Sales, Inc., Memphis 2, Tennessee.

MISSOURI—Euclid Sales & Service, Inc., 5231 Manchester Ave., St. Louis 10.
The G. W. Van Keppel Co., 2440 Pennway, Kansas City 8.

MONTANA—Hall-Perry Machinery Co., P. O. Box 1367, Butte.

NEBRASKA—Constructors Equipment Co., Denver 5, Colorado.
Fehrs Tractor & Equipment Co., 1809-11 Cuming St., Omaha 2.

NEVADA—The Euclid Road Machinery Co., Emeryville, Monrovia, California.
Fouiger Equipment Co., Salt Lake City 8, Utah.

NEW HAMPSHIRE—Clark-Wilcox Co., Boston 34, Mass.

NEW JERSEY—L. B. Smith, Inc., Camp Hill, Penna.
Hubbard & Floyd, Inc., New York 51, N. Y.

NEW MEXICO—Lively Equipment Co., 2601 No. Fourth St., Albuquerque.

NEW YORK—Hubbard & Floyd, Inc., 161st St. & Gerard Ave., New York 51.
T. E. Potts Equipment Co., 2260 Sheridan Dr., Buffalo.
L. B. Smith, Inc., 357 W. Fayette St., Syracuse 2; 134 State St., Albany.

NORTH CAROLINA—Hampton Roads Tractor & Equipment Co., Norfolk, Virginia.
North Carolina Equipment Co., P. O. Box 880, Greenville; Pineville Rd., Charlotte; Sweeten Creek Rd., Asheville; P. O. Box 128, Guilford; P. O. Box 885, Wilmington.

NORTH DAKOTA—The Euclid Road Machinery Co., Hibbing, Minnesota.

OHIO—The W. W. Williams Co., 835 Goodale Blvd., Columbus 8; 18301 Brookpark Rd., Cleveland 11; 914 Main St., Cincinnati 2; 1260 Conant St., Toledo (Maumee).

OKLAHOMA—The Euclid Road Machinery Co., Dallas 1, Texas.

OREGON—Intermountain Equipment Co., Boise, Idaho.
P. L. Crooks & Co., 2145 N.W. Pettygrove St., Portland.

PENNSYLVANIA—Atlas Equipment Corp., 635 Ridge Ave., Pittsburgh 12.
Standard Equipment Co., 152 Horton St., Wilkes-Barre; Hepburn & Lycoming Sts., Williamsport.
L. B. Smith, Inc., Camp Hill (Harrisburg); 39th & Montgomery Avenue, Philadelphia.

RHODE ISLAND—Clark-Wilcox Co., Boston 34, Mass.

SOUTH CAROLINA—Southern Equipment Sales Co., Sumter Highway, Columbia.

SOUTH DAKOTA—The Euclid Road Machinery Co., Hibbing, Minnesota.

TENNESSEE—Euclid-Memphis Sales, Inc., 185 E. Butler Ave., Memphis 2.
Power Equipment Co., 1216 Island Home Ave., Knoxville; 600 W. Manning St., Chattanooga.

TEXAS—The Euclid Road Machinery Co., 2524-26 Main St., Dallas 1.
Lively Equipment Co., Albuquerque, New Mexico.

UTAH—Fouiger Equipment Co., 1361 So. 2nd West, Salt Lake City 8.

VERMONT—Clark-Wilcox Co., Boston 34, Mass.

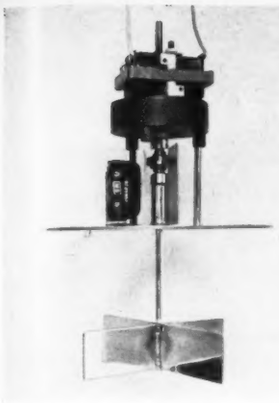
VIRGINIA—Hampton Roads Tractor & Equipment Co., W. 39th and Killam Ave., Norfolk.
Rish Equipment Co., 1601 Chamberlayne Ave., Richmond 10; 405 Center Ave. N.W., Roanoke 7.

WASHINGTON—A. H. Cox & Co., 1737 1st Ave. So., Seattle 4; 2015 Center St., Tacoma; 313 North Mission, Wenatchee.
P. L. Crooks & Co., Portland, Oregon.
Intermountain Equipment Co., E. 611 Sprague Ave., Spokane 5.

WEST VIRGINIA—Atlas Equipment Corp., Pittsburgh 12, Pennsylvania.
Rish Equipment Co., Kanawha Blvd., Charleston 22; East on U.S. 50, Clarksburg; P.O. Box 269, Bluefield.
L. B. Smith, Inc., Philadelphia, Penna.

WISCONSIN—Euclid-Chicago Co., Chicago 31, Ill.
The Euclid Road Machinery Co., Hibbing Minn.

WYOMING—Constructors Equipment Co., Denver 5, Colorado.
Fouiger Equipment Co., Salt Lake City 8, Utah.



The Convair Bin-Vue level indicator is unaffected by pressure or vacuum.

Bin-Level Indicator

A bin-level indicator which is said to be unaffected by pressure or vacuum is announced by Convair Corp., 4156 Library Road, Pittsburgh 34, Pa. The Bin-Vue can be used with any dry bulk material that flows, and is said to give positive signals at the top, middle, or bottom.

It consists of a $\frac{1}{200}$-hp motor which is connected to a shaft by means of a torsion spring. A 4-blade paddle turning at 5 rpm at the end of the shaft revolves as long as material does not touch it. When the paddle is stopped, the motor keeps on turning until the spring actuates a limit switch, which kicks out the motor and starts any desired equipment. The procedure is reversed when material falls away from the paddle.

For hazardous conditions, the Bin-Vue can be supplied in an explosion-proof model. The standard motor is available in any voltage.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 738.

Booklet on Steel Buildings

A booklet describing a line of steel buildings is issued by Howard Steel Co., 1014 S. Dittmer St., Davenport, Iowa. These buildings come in 36 and 42-foot widths; 10, 12, and 14-foot heights; and 48-foot and longer lengths. The columns and truss frames are structural steel, and the sheeting is 26-gage galvanized steel.

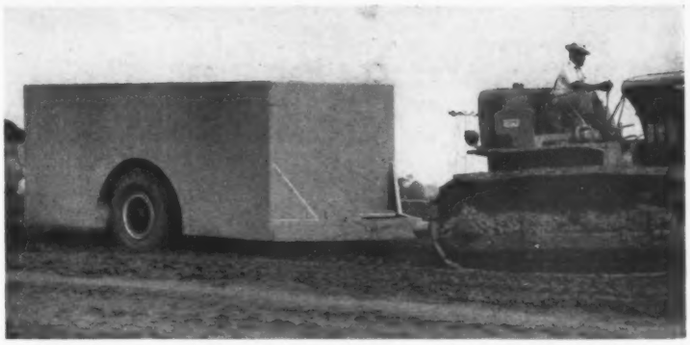
This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 760.

Pocket Safety Manuals

The Associated General Contractors of America, Inc., has published 14 reprints of some sections of its "Manual of Accident Prevention in Construction". The 4 x 6-inch reprints slip easily into a pocket so that superintendents, foremen, and workmen can refer to them right on the job. Each reprint contains from one to six conveniently grouped sections of the original manual, which was completely revised in 1949. There are blank pages in the back for notes.

Booklet A covers explosives; B deals with hoists, cranes, and derricks; and C describes safe scaffolding. As for the rest: D—housekeeping, camp housing and sanitation, occupational diseases; E—demolition, excavation; F—arc welding, gas welding and cutting, explosive gases and liquids; G—handling and storage of materials, shoring, barricades, pile driving; H—form construction and concrete placement, steel erection, masonry, ladders, power saws, hand tools; I—motor trucks, garages and repair shops; J—road and street construction, motor graders, bulldozers and tractors, conveyors and cableways, equipment upkeep; K—tunnels, shafts, compressed-air work; L—boilers, unfired pressure vessels, temporary electrical installations, fire hazards and prevention, protective clothing; M—railroad construction, quarries and gravel pits, laying pipeline, boats and barges; N—inspection, reference tables, alphabetical index.

The reprints are available from most AGC chapter and branch offices or from the national headquarters of the Association, Munsey Bldg., Washington 4, D. C. Prices are as follows: 1 copy, 10 cents; 10 copies, 90 cents; 25 copies, $2.25; 50 copies, $4.00; 100 copies, $7.50; 500 copies, $35.00; 1,000 copies, $65.00.



The new Grace 50-ton pneumatic roller, loaded to 42 tons, compacts an earth dam.

New Four-Tire Roller With 50-Ton Loading

A four-tire pneumatic roller which can be loaded up to 50 tons has been put on the market by W. E. Grace Mfg. Co., 5990 Lamar St., Dallas, Texas. The manufacturer claims that on large earth fills, the roller need make only two-thirds as many trips as a 500-psi sheepsfoot roller and will get 3 to 5 pounds more density per cubic foot. When the soil is wet or does not have the load-carrying capacity for 50 tons, weight can be reduced as much as 50 per cent with results comparable to those obtained with the sheepsfoot. Tire size is 16.00 x 21, 36-ply. Each pair of wheels oscillates to provide even pressure. Body capacity is 700 cubic feet.

Further information on this roller may be secured from the company. Or use the Request Card at page 16. Circle No. 818.

Barber-Greene

840 BITUMINOUS PAVING PLANT

B-G 840 Paving Plant, showing use of bulkhead feed with two-gate feeder for proportioning sand and gravel. 2, 3 or 4 aggregates may be blended in this manner.

FOR NEW CONSTRUCTION...
RESURFACING...
MAINTENANCE...

PRACTICAL . . . PROFITABLE

UP TO 40 T. P. H.

The capacity range of this B-G Paving Plant has proved to be the most practical for a broad range of users. Output is high enough to supply materials for average-sized new construction and resurfacing jobs—investment is low enough to assure profitable operation at minimum capacities, or for intermittent operation.

ALL TYPES OF MIXES

Bituminous mixes of all types are produced at lowest cost with this B-G Plant. This includes the full range—all temperatures, all gradations and all binders. For "high-type" mixes, the aggregates are blended at the feeding end. Quality and uniformity are consistently high.

TRULY PORTABLE

Each basic unit of this plant—Mixer and Dryer-Dust Collector—is mounted complete on its own trailer-type pneumatic-tired chassis. Built-in hot and cold elevators and dryer stack fold down for transport. There is a minimum of dismantling—the plant can be moved and readied for work in new locations in a few hours' time.

EASIEST TO ERECT

No special erection equipment is needed to set up a B-G Paving Plant. No excavation or footings required. Units are spotted in place by truck, adjustable jacklegs are lowered to ground level, and the plant is ready for operation once the required auxiliary equipment is in place.

LOW-COST MAINTENANCE

The B-G Model 840 Paving Plant is easy to maintain. All moving parts are quickly accessible for inspection and adjustment. B-G Distributors offer fast emergency parts service, and are staffed with factory-trained experts to help you keep your B-G Paving Plant at top operating efficiency.

AUTOMATIC PROPORTIONING

Simple to understand and to operate, the B-G Paving Plant eliminates the human element in producing a consistently uniform mix. Once the bitumen and aggregate proportions have been set, they cannot vary as the positive displacement pump and aggregate apron feeder are positively interlocked. Proportioning is continuous, automatic and accurate.

BARBER-GREENE COMPANY
AURORA, ILL., U. S. A.
See your B-G Distributor

A Pressure Pipeline Loops Oklahoma City

Contractors Rush the Laying of Water Mains as City Builds Huge $10,048,000 Water-Supply Expansion

• THE year 1951 will long be remembered in Oklahoma City. Last year, for the first time in the city's history, adequate water-supply facilities were installed for the people. A $10,048,000 extension program, financed by bonds the people voted in 1950, includes about $4,000,000 for new filtration-plant extensions, $4,500,000 for pressure pipelines, and $1,500,000 for appurtenant facilities to round out the water-supply system.

One of the big items in the program is approximately 100 miles of cast-iron pressure pipeline, from 6 to 30 inches in diameter, laid in a large loop around the city. The line will serve people in the expanding environs who never before had an adequate water supply.

Enormous pumps have been installed at the filtration plant at Fourth and Pennsylvania Streets, to keep the water continuously circulating through the main at a pressure of 80 psi. This filtration plant softens, purifies, and distributes water from Lake Overholser to the central and southern part of Oklahoma City. The northerly part of Oklahoma City gets its water from Lake Heffner.

Photo Courtesy of Earl W. Baker & Co.

Stang wellpoints and Moretrench pumps handled the dewatering for the 960-foot pipeline crossing of the North Canadian River in Oklahoma.

Earl W. Baker & Co., public-utilities contractor of Bethany, Okla., was one of the prime contractors on two sections of the work. Prime contractors for other sections were M. A. Swatek & Co., Doerfler Construction Co., Pennington-Winters, Inc., and Paul Nunn. In an effort to speed the much-needed installation, and to meet early completion dates, other contractors—Sherman Machine & Iron Works, B & M Construction Corp., and Lippert Bros.—used their equipment and organizations to assist the various prime contractors in the pipeline job.

Work got under way in late January, and the first pipe was laid on March 2. By the end of 1951, the job was expected to be substantially complete. The main sources of delay have been fittings and transitions for the pipeline.

Contractor Does Share

The Earl W. Baker & Co. organization moved rapidly on its part of the project. Baker's men and equipment took over the toughest part of all: a 960-foot crossing of the North Canadian River between southwest 15th and 17th Streets.

The river crossing was made with 30-inch steel cement-lined pipe, and involved 30-foot open cuts, construction of two sets of earth dikes or cofferdams, and an extensive dewatering job. The North Canadian River, after passing beneath the Santa Fe Railroad bridge, originally made a sweeping curve toward the north. The river was therefore handled by building the pipeline out to the existing channel. A temporary channel was then dug by a Northwest dragline, and the river was carried still farther north while two earth dikes were built by bulldozers, upstream and downstream from the line. The channel was then straightened by cutting an open trench north of the point where the pipeline had been placed. That left the temporary end of construction in the dry, however wet and swampy the old riverbed might become.

Before work could resume, therefore, it was necessary to pull off an extensive dewatering job. Five Moretrench pumps were brought in, and Stang 30-foot wellpoints were installed around the pipeline crossing. About 65 wellpoints were used on each pump, and the water was discharged back into the stream.

A small compressed-air hammer

(Continued on next page)

HERE'S WHAT WE PUT *INTO* A ROCK DRILL ...SO YOU CAN GET MORE *OUT* OF IT!

Combination Backhead for blast rod, air tube or water tube operation greatly reduces cost of change-over parts. Air-operated automatic water valve is optional on same backhead.

Jet Valve is instantaneous, positive-acting, end-seating. Thrown by a jet of air, it provides precise timing. Increased piston hammer velocity results in high drilling speed, low air consumption, strong rotation and easy holding.

Integral Cylinder. All hammer bores are ground in line at one operation, allowing piston hammer to run in true alignment. Replaceable bronze cylinder bushing maintains the front cushion.

Resilient Retainer. Yoke-type, held in replaceable hardened steel bushings and spring-cushioned to dampen vibrations when pulling drill rods. Easily opened and closed, can't wear the chuck housing, and has positive lock-on nuts.

Four-Pawl Rotation. Four reversible pawls give maximum service at four rotation speeds — extra fast, fast, slow, extra slow.

Independent Blow Control changes from drill to blow with ease. Full line pressure available for emergency blowing. Large diameter air tube assures strong, constant blow. Side outlet exhaust is possible with optional blow valve.

Three-Piece Chuck. Chuck, sleeve and nut. Replaceable bronze chuck nut held in a steel sleeve checks piston flute wear.

Worthington
BLUE BRUTES
Have Everything You Need For Hard, Fast, Money-Saving Drilling

With every detail designed to make air do more work, Blue Brute Rock Drills combine the ruggedest construction with the easy handling that goes over big with operators. The WS-55, illustrated, is right for average jobs. For lighter work, use the WS-45 — for heavy duty, the WS-30.

3 More Reasons Why There's More Worth In A Blue Brute!

WB-34 Paving Breaker
Hardest-hitting, easiest handling breaker in the 35-lb. class. Ideal where the operator has to lift the tool frequently in guiding its work.

W-14 Clay Digger
Developed in the field by men with practical experience in clay, and thoroughly proved by long, rigorous job-testing.

W-8 Backfill Tamper
Medium weight, with simple horse-shoe valve and ample oil reservoir. A good "walker" that does a finished backfill job, ready for immediate paving.

Worthington Pump and Machinery Corporation
Construction Equipment Sales Department
Dunellen, New Jersey
Distributors In All Principal Cities
WORTHINGTON

Immediate deliveries from your nearby Worthington Distributor See him, or write us direct

BUY WORTHINGTON BLUE BRUTES

H1-1

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB

Vulcan Tools
Rock Drills, Pavement Breakers and Clay Diggers.

Vulcan Tool Manufacturing Co.
35-42 Liberty Street, Quincy 69, Mass.
Branch Offices and Warehouse Stock.
74 Murray St. 24 No. Clinton St.
New York 7, N. Y. Chicago 6, Ill.
Send for catalog or see your local distributor.

then drove the 23-foot pile trestle which supported the line. The pipe joints were placed and welded, the line was tested, and backfill was then placed. The cement lining was installed as the final operation under a subcontract with the Centriline Corp. of New York. The river crossing carries the water about 15 feet beneath the riverbed.

The river crossing was made with good luck before spring rains raised the water level. Watermain Construction Superintendent Henry Robertson escaped most of the usual problems until one day when several home owners discovered his wellpoints had sucked their wells and cisterns dry. The excess efficiency of the points didn't reach a stage where the ladies pulled his hair out in handfuls, but nevertheless Robertson was mighty happy when the first good rain fell.

Good Pipeline Organization

Routine pipeline-laying work was characterized by excellent organization, good equipment, and certain definite policies aimed at keeping the work moving, rain or shine. For example, all right-of-way for the trench was graded by an Allis-Chalmers AD motor grader just ahead of the trenching machine, to take away any rain which might fall. Operations were closed up tight at all times, especially during rainy periods. Then the pipe was laid up each night to the trenching machine, and if there was imminent danger of rain and flooding, an earth dike was backfilled in the trench.

The use of air tools for caulking the bell-and-spigot joints also proved very efficient.

Pipe in 16 and 18-foot sections was manufactured in Birmingham, Ala., and shipped by rail to Oklahoma City. Trucked to the site, it was unloaded by truck crane ahead of the pipe crew. The pipe is cast-iron Super-deLavaud and Mono-Cast with a cement Enameline lining to insure clean water when the line goes in use. All of Oklahoma City's water lines are being cement-lined to get rid of the red cast in water which passes through unlined cast-iron pipe.

Surveyor's hubs were set on line every 50 feet, and the grade line was also roaded in from a reference point. Pipe grades were easily carried from that point by setting batter boards referred to the upper grade stakes. The batter boards were clamped to a pair of steel angle-iron legs, which could be quickly driven in the ground by means of driving heads welded on at the top.

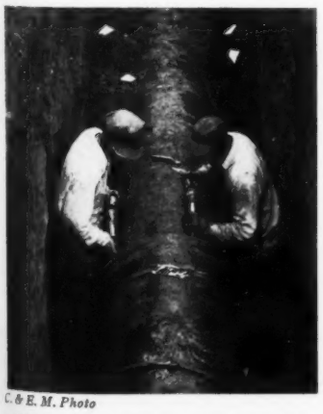
Baker's organization used a Parsons 250 Trenchliner to dig the pipeline trench, which varied from 4 to 13½ feet in depth. The average depth of trench was 7 feet. Using Parsons teeth, the machine cut through red clay, red shale, and gravel. At one point the crew ran into about 300 feet of hard red granite-like stone, which was about 3 feet thick over the grade point. They were stuck at that point for a week, unable to use dynamite because of houses all around. The rock was chewed out the hard way, using moil points on the several Thor jackhammers scattered around. Inch by inch the machines opened up that section.

On usual formations where the trench was about 7 feet deep and 34 inches wide, the crew could move forward at a rate of about 40 feet an hour. Fine-grade was made by hand, and the extra digging for bell joints was also done by hand, throwing the material forward where the Trenchliner could pick it up. For all the larger sizes of pipe, the trench was ordinarily excavated 9 inches wider each side than the outside of the pipe.

(Concluded on next page)

C. & E. M. Photo

A Parsons 250 Trenchliner excavates a trench for Oklahoma City's cast-iron 100-mile pressure pipeline. The trench depth varied from 4 to 13¼ feet.



C. & E. M. Photo

Two workmen with air tools caulk the bell-and-spigot joints of the water main on the Oklahoma City project.

NEED A CRANE ON RUBBER?

LORAIN BUILDS THE MOST COMPLETE LINE FROM 10 TO 45 TONS

45 TON CAPACITY

WORLD'S LARGEST RUBBER-TIRE CRANE

Here it is — the largest crane on rubber in the world — the Lorain MC-824 Moto-Crane. This is one of two working for Ebasco Service Corp., Joppa, Illinois. A number of these giant cranes have been proven in all types of service — all over the country.

When your job calls for rubber-tire mobility in a crane make your selection from the world's most complete line . . LORAIN! You'll have more sizes, types of mountings and drive arrangements to fit your needs — no matter what they may be.

NEED CAPACITY? How big — or small — or in between? Lorain Crane capacities on rubber range from the versatile 10-ton Self-Propelled SP152 up to the world's largest crane on rubber — the mighty 45-ton MC824 Moto-Crane shown above.

NEED POWER & DRIVE? Select from 2 or 3 axle types with 4 or 6-wheel drive for plenty of tractive effort — plus big, multiple tires for soft ground flotation. There's a type to match your needs.

NEED 1 OR 2 ENGINES? 30 m.p.h. Moto-Cranes with 2 engines are especially Lorain engineered and built to match crane capacities. Single-engine, Self-Propelled machines (7 m.p.h.) round out the biggest rubber-tire crane selection in the field! Remember, Thew built the first crane on rubber tires and is still the leader in this field. *If you need a rubber-tire Crane . . . be sure to check with your Thew-Lorain Distributor to be sure of the best!*

THE THEW SHOVEL CO., LORAIN, OHIO

LORAIN BUILDS CRANES FOR THE SMALL JOBS, TOO!

Here's the "baby" of the Lorain Rubber-Tire Crane family. This 10-ton Self-Propelled Crane, Model SP152, erects a concrete plant for dam construction. Big lifts or little, there's a Lorain on rubber to fit the job.

THEW LORAIN

A Pressure Pipeline Loops Oklahoma City

(Continued from preceding page)

The 16 and 18-foot pipe sections, which weigh slightly more than 2½ tons in the 30-inch size, were handled by an International TD-18-mounted Cardwell hoist and boom, with sufficient counterweights to hold the loads. The machine lowered the pipe to position, and men entered the joint. Joint makeup consisted of a hemp strand covered by hot lead. The lead was poured out of ladles, making the entire joint pour at one time with Mueller pouring ropes. Thor, Chicago Pneumatic, and Ingersoll-Rand air guns were on the job with caulking tools to seat the joint material after it was placed. Specifications called for a hydrostatic-pressure test of 150 psi on completed lines—for 6 hours on 30-inch size, and 2 hours on smaller sizes. In all cases the leakage has been well below permissible limits.

Earth backfill was hand-shoveled in so that Ingersoll-Rand air tampers could compact the material to a point 6 inches above the spring line. After that, mechanical tamping was done. Where the line does not pass under city streets or other paved areas, the backfill was shoved in by a Baker bulldozer attachment on the AD-4 Allis-Chalmers motor grader. The line passes for a considerable distance over the right-of-way of a proposed highway, so it was not necessary here to pay too much attention to backfill. By the time the highway is built, final settlement will have taken place. Where the line was laid under city streets, however, special care was taken with the backfill, and pneumatic tampers compacted the material all the way up to street level.

Excellent cooperation with utilities companies has been a feature of the work. When the trench work was about to intercept telephone or power cables, representatives from those companies showed up and located the cables themselves. Then they stayed on the job until the final backfill had passed that point. The only unlocated utilities lines that were hit were several oil pipelines of small diameter which had been laid without a record.

In general, too, there has been the utmost cooperation from all the people. When it was necessary to block a driveway for a half day or so, the people were patient and took the inconvenience with extraordinarily good grace.

Personnel

The big pipeline was laid under the general supervision of M. B. Cunningham, Superintendent and Engineer of the Oklahoma City Water Department. Design and engineering work was done by a private firm, C. E. Bretz, Consulting Engineer, whose field personnel consists of Harry Sullivan, Field Engineer, and Ray Loggins, Inspector on Baker's section of the work. Earl W. Baker & Co.'s field organization was headed by R. K. Jones, General Superintendent, with Henry Robertson as Watermain Construction Superintendent.

Forms Hot-Mix Association

The Hot-Mix Asphaltic Concrete Association of Oklahoma, Inc., is a newly chartered group, having as its President A. J. Kavanaugh, President of the Metropolitan Paving Co., Oklahoma City, Okla. Professor J. Rogers Martin is Chief Engineer of the new Association. Professor Martin has had many years' experience in all phases of asphaltic paving, including 12 years with the Texas State Highway Department and a research professorship at Oklahoma A & M College.

The purpose of the new association is to foster sound engineering, full utilization of latest technical advances, and public relations. A realization of the necessity for such an organization, said President Kavanaugh, came about through the rapid expansion in the use of asphaltic concrete on highways and city streets.

Catalog on Asphalt Products

A catalog on asphalt products for concrete and masonry construction is available from The Philip Carey Mfg. Co., 8 Wayne Ave., Lockland, Cincinnati 15, Ohio. It lists all the Elastite materials—asphalt expansion joint, filler asphalts, fiber joint, sealing compound, subgrade felts, and asphalt plank.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 709.

M-C&S Launches Magazine

"Black Horse News" made its bow in February. It is the new monthly magazine of Merritt-Chapman & Scott Corp., New York City contracting firm. The first 16-page issue deals with the company's work in marine, heavy, industrial, and building construction, marine salvage, and derrick heavy hoisting. Included are articles on the growth of the paper industry in the south; the building of trench-type tunnels which are prefabricated in sections and joined together under water; the rescue of a tanker which had lost a propeller in the South Atlantic; and wharf and dam projects in such far-apart spots as New Zealand and California. Personnel items, too, have their place in "Black Horse News", and the activities of the M-C&S staff receive frequent mention.

Davey Compressor Appoints

A. H. Knief was recently appointed Regional Manager of the Davey Compressor Co., Kent, Ohio, manufacturer of portable air compressors. Mr. Knief will make his headquarters in Milwaukee, Wis., and will be in charge of Davey sales in Wisconsin, upper Michigan, Minnesota, Iowa, Illinois, and Missouri.

only Allis-Chalmers can offer

1000 Ho

for truck wheels, idlers, support

FULL PROTECTION — only One Greasing Every 1000 Ho with Allis-Chalmers *Exclusive* Positive Seal, Roller Bearing De

Think of it! You can operate for 6 months on a 40-hour-week basis with one lubrication of 14 to 20 of the most-abused, hardest-to-service points on your tractor. It's possible through an exclusive combination of glass-smooth Positive Seals and anti-friction bearings that help you do more work at lower cost even under toughest conditions! And it's another ahead-of-the-field feature found only in the four new Allis-Chalmers tractors.

These Big Benefits Mean DOLLARS to you!

DAILY GREASING PERIODS ELIMINATED. You save at least 30 minutes every day . . . gain about one full month's production every year.

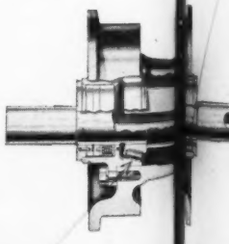
FULL PROTECTION ASSURED. Positive Seals keep grease in . . . dirt and moisture out. 1000-Hour Lubrication gives you protection unchallenged in the tractor field.

SAVES ON GREASE. Truck wheels, idlers and support rollers are grease-filled at the factory . . . need new grease only once every 1000 hours!

EASY TO SERVICE. No more cleaning of dirt, muck and grime from fittings every day. Operator can choose time and place to regrease when conditions are favorable.

Here's the secret

Positive Seals each have two rings — one stationary, one on the wheel. Ground smooth, they keep the grease in . . . keep dirt, mud, water *out*.



Tapered Roller Bearings by letting truck wheels rotate freely... without Reduced friction lets them produce more drawbar

the newest finest tractor line on Earth!

HD-20 HD-15 HD-9 HD-5

DESIGNED FOR YOUR JOBS • BUILT TO TAKE IT • EASY TO OPERATE •

Surface Protection For Airfield Runway

Airfield runways and taxi strips can now be protected from jet fuel spillage with a coat of plasticized synthetic rubber and tar blend, announces the Naugatuck Chemical Division of United States Rubber Co., 254 Fourth Ave., New York 10, N. Y. According to the company, the blend is unaffected by searing jet blasts, which range in temperatures from approximately 160 to 300 degrees F and higher. It is also said to withstand high wheel loads and give a densely graded surface, relatively non-skid.

Surfa-Aero-Sealz is mixed with selected tar cement in the hot-melt phase, to produce a homogeneous mixture. It is shipped to construction sites in drums, tank cars or tank trucks, where it is mixed with aggregate by a regular hot-mix plant. It is laid by regular paving equipment, then rolled and compacted by tandem rollers. Coatings from 1 to 1½ inches are applied to asphaltic-concrete pavements.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 744.

Cummins Advances Weber

John T. Weber was recently named Manager of Sales Development for Cummins Engine Co., Inc., Columbus, Ind., in succession to Howard P. Sharp, who has resigned. Mr. Weber has been with Cummins since 1947.

Blast-Cleaning Generators

A bulletin on blast-cleaning generators is available from Ruemelin Mfg. Co., 3860 N. Palmer St., Milwaukee 12, Wis. The company manufactures a line of standard units with capacities from 50 to 2,000 pounds of sand. Nozzles from $\frac{3}{16}$ to ½ inch handle sand, steel shot, steel grit, or artificial abrasive. Portable and continuous large-capacity units are also available.

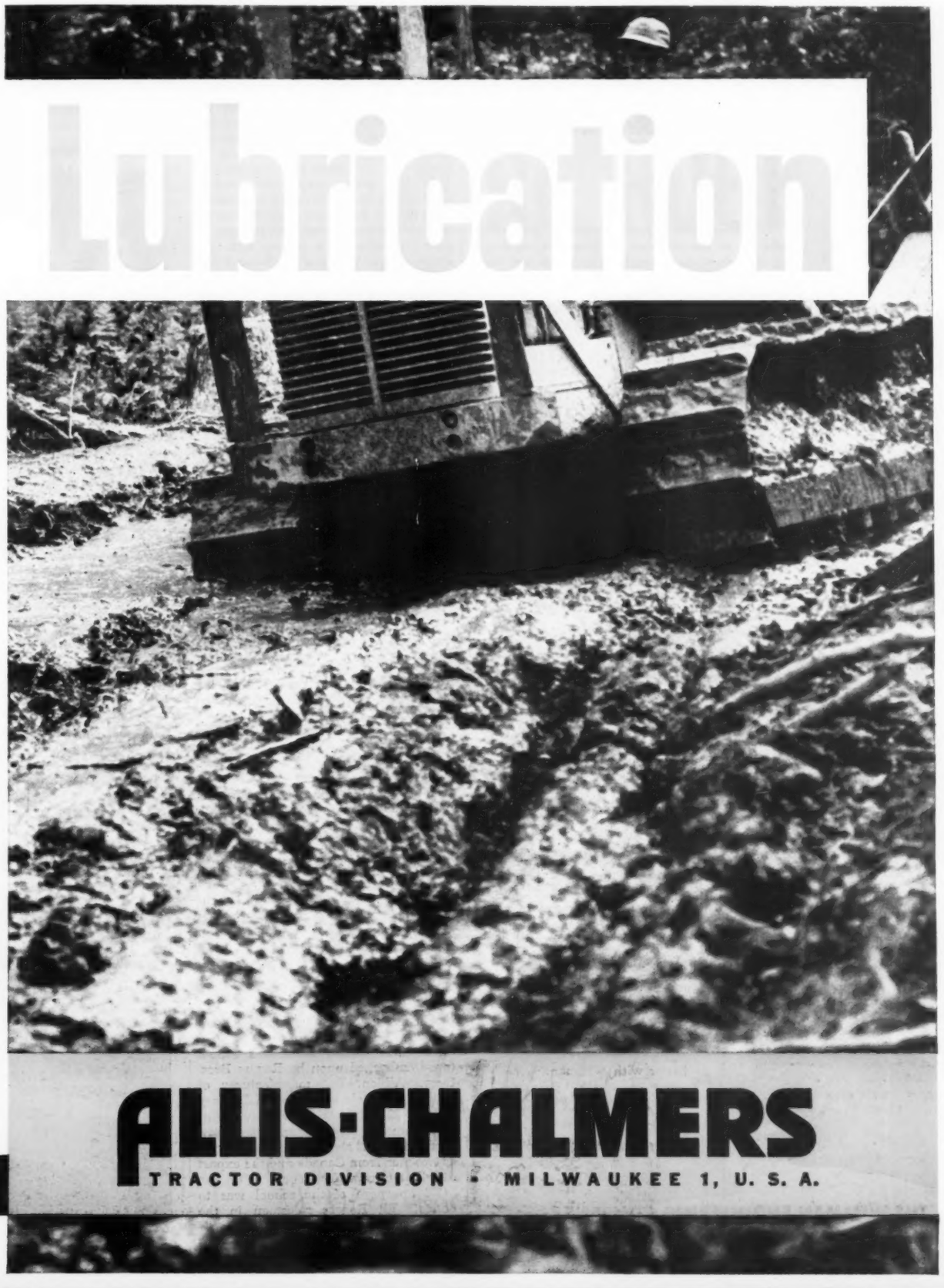
All generators have an automatic mixing box, rubber valves in sand passages, and moisture expeller. The bulletin also lists accessories.

This literature may be obtained from the company by requesting Bulletin 36-C, or by using the Request Card at page 16. Circle No. 731.

Liebscher, Le Roi President

T. O. Liebscher was recently appointed President of Le Roi Co., Milwaukee, Wis., manufacturer of portable air compressors, tractor-compressors, and rock drills. Mr. Liebscher joined the company in 1940 and was Executive Vice President from 1950 until his present appointment.

Other officers appointed include: G. J. Hamm, Secretary-Treasurer; C. W. Decker, Assistant Secretary; and J. R. Gavigan, Assistant Treasurer.



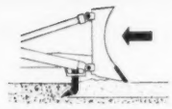
Drawn-Type Grading Unit

A 2-page folder on a drawn-type grader for road and shoulder maintenance, honing blacktop stabilization work, resurfacing, etc., is issued by The Burch Corp., Crestline, Ohio. The hydraulically controlled machine has seven blades which handle the material four times.

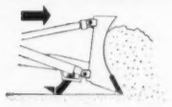
The tractor-drawn Model AT has an independent strikeoff blade which is adjusted by two hand wheels. The unit rides on four rubber tires and weighs 5,420 pounds.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 766.

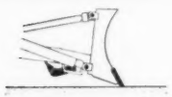
PRECO *Back-Rippers*



RIPPING
The 4 shanks, capped with lock-on teeth, rip the ground when tractor is backing up. Blade acts as depth gauge.



BULLDOZING
When tractor moves forward, teeth drag on top of ground. No controls are required.



RETRACTED
Each tooth can be independently pinned up out of way. This permits making side cuts, trenches, curb locations.

See your "Caterpillar" dealer or write us for information.

Preco Back-Rippers, which have proven so effective on straight blade bulldozers in breaking up the ground for easier, quicker dozing, now are available for angling blade bulldozers.

As the photo above shows, the four Back-Ripper housings are welded to the "C" frame on Caterpillar Diesel tractors, making the Rippers universally effective, irrespective of the angle of the blade.

The Rippers dig in and rip the ground *only while the tractor is backing up.* On each forward trip the teeth float on top of the ground. They are completely automatic in operation—there are no controls and, when desired, they can be locked up out of the way.

Preco Back-Rippers have been in use for the past three years by many well-known contracting firms. They save time and have replaced other equipment in building pioneer roads, clearing land and rights-of-way, in gravel pit operations, slate breaking in coal strip mines, mounted on pusher tractors for faster scraper loading, for logging operations and many other uses. Quickly installed on most straight and angling blade bulldozers.

PRECO
INCORPORATED
4500 E. SLAUSON AVE. LOS ANGELES 22
CABLE ADDRESS PRECO

WELLMAN *Williams Type*

MORE YARDAGE PER DAY

● Elimination of excess materials and careful weight distribution permit rapid, rhythmic operation of Wellman Dragline Buckets. Operators can cover a wider digging radius with this streamlined bucket.

Built of special alloy steel, using strong welded design, Wellman buckets provide strength and stamina for long-term economy. Perforated designs also available. You'll do better with Wellman.

Want Facts?

Write for free descriptive bulletins.

THE WELLMAN ENGINEERING COMPANY
7000 Central Avenue • Cleveland 4, Ohio

DRAGLINE, CLAMSHELL, CUSTOM-BUILT BUCKETS • STONE AND WOOD GRABS

Vibrator Unloader

An external vibrator for unloading hopper cars, bins, chutes, etc., is manufactured by Vibro-Plus Products, Inc., 54-11 Queens Blvd., Woodside, Long Island, N. Y. It consists of a Type ER Topdog vibrator, a push-pull hydraulic jack, a clamping device, and a pair of jaws, which will clamp on any steel member with a pressure of 10 tons. The unit weighs about 100 pounds and operates on 60-cycle 3-phase current in voltages from 110 to 550.

Further information on this vibrator may be secured from the company. Or use the Request Card at page 16. Circle No. 764.

It Depends on the Diesel

The construction industry is unpredictable. But E. R. Galvin, Assistant to the President of The Buda Co., Harvey, Ill., doesn't believe in leaving more than need be to chance. He suggests five ways in which to *plan* for construction success: bid soundly; manage the job well; select equipment carefully; analyze critically the day-in-day-out parts and mechanical servicing of equipment; and keep ahead of the job.

Of these points, equipment selection ranks high in Mr. Galvin's estimation. He says the important thing to remember here is to keep up with changes so that job technique is in step with machine design. Where a small-sized unit would have been considered entirely adequate a few years ago, the same job today calls for a machine twice the size. This means more power, and the contractor who is selecting engine-powered equipment has to be on the lookout that his power increases in proportion to the capacity and weight of his machines, as well as to the greater horsepower now demanded. Other points are raised by such considerations as the advent of the torque converter, hydraulic steering, automatic transmissions, etc.; the increasing size and cost of tires; and the danger of overloading a cylinder of a given bore, stroke, and rpm.

The diesel engine directly affects profits in the construction industry, Mr. Galvin says. Seventy-five per cent or more of the time and effort of machine operators on the average earth-moving job is expended in getting maximum efficiency out of the diesel engines they are operating, as only by this means will the maximum production be realized from the complete unit; and a major percentage of fuel and lubricant consumption and of parts replacement and servicing is taken up by the engine. Therefore, in the important matter of selecting diesel engines for a job, Mr. Galvin recommends that the contractor consider engine performance as it affects return on his machinery investment; job-management returns; operating record and production output; on-time completion of the contract; and profit from the job.

Finally, Mr. Galvin stresses that the diesel engine is a power plant and that its output may be adversely affected by operators who overwork and abuse it; by inferior fuels, lubricants, and maintenance; and by the use of non-genuine repair parts.

Rogers' Salesmen's School

The first annual salesmen's school to be embarked upon by Rogers Bros. Corp., Albion, Pa., manufacturer of trailers, was held in Albion on January 24 and 25. Ninety heavy-equipment distributors, salesmen, and engineers, representing 22 states, attended, as well as two men from Canada and the export distributor from New York.

The purpose of the school was to educate all Rogers salesmen in the field as to engineering, design, and latest developments in Rogers trailers. Instruction covered sales lectures, a talk on the history of the company, and a guided tour of the plant. Social events during the two-day school included luncheons, a steak dinner, and a cocktail party and banquet.

Because the Vibro-Plus Shake-Out will clamp onto any angle iron, channel section, or other beam, it can be fastened to any hopper where vibration is required for unloading.

WATSON-STILLMAN
HYDRAULIC POWER TOOLS FOR INDUSTRY

HYDRAULIC JACKS | WIRE ROPE SHEARS

These sturdy units, with either independent or integral pumps, are useful for many jobs in construction and maintenance. Capacities from 20 to 500 tons.

W-S wire, cable and bar shears provide years of trouble-free general service. They are light and portable for convenient on-the-job use.

PORTABLE PIPE BENDERS | HAND PUMPS

Bends all standard, extra heavy and double extra heavy steel pipe from ⅜ in. to 2 in. inclusive, as well as standard weight pipe up to 3 in. diameter. Also handles solid mild steel bars up to 2 in. diameter.

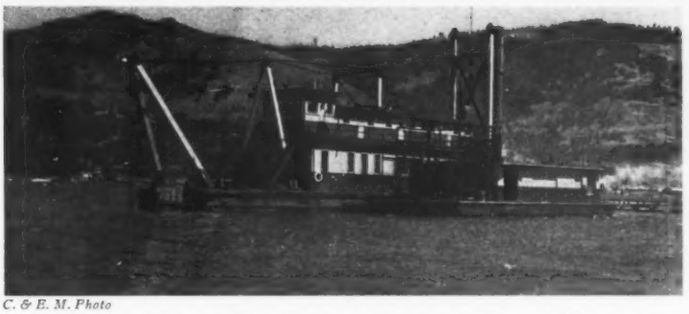
Single and double plunger types; with reservoirs of different capacities to suit the job, these hand pumps have a wide application for operating small hydraulic tools, jacks and other hydraulic equipment, and for general hydrostatic testing purposes.

Send for your copy of Bulletin A-5 It's Free.

DISTRIBUTOR PRODUCTS DIVISION
WATSON-STILLMAN
ROSELLE, NEW JERSEY

Fill Dredged From River To Realign Crooked Road

Project Brings Dangerous Winding Highway Down From Buffs To River Bank to Make It Safer and Increase Its Capacity



C. & E. M. Photo

Washington No. 3 is a 24-inch hydraulic dredge built in 1916 but added to and rebuilt many times since then.

By RAYMOND P. DAY

• SIXTY-FIVE miles east of Portland, Oreg., where U. S. 30 winds up the scenic Columbia River gorge, hydraulic dredging is in progress to realign the crooked highway. General Construction Co. of Portland has a $1,000,000 contract with the Oregon State Highway Commission for 7 miles of new work between Hood River and Mosier. Hydraulic fill is being used for approximately 90 per cent of the 4,500,000-cubic-yard project.

Several years ago, the first contracts were started to rebuild the Columbia River Highway from Portland all the way to where the route clears the Columbia River canyon. The old highway was scenic, but it had also become dangerous. The work now under way is designed to alleviate the dangerous condition, and to permit the road to carry a much greater volume of traffic.

The new alignment is much better than the old. Early highway engineers, when they laid out the original road, had to leave the river in many places and take to the high bluffs on the Oregon shore. This caused switchbacks, steep grades, severe snow conditions in winter, and a generally unsatisfactory condition to accommodate modern traffic.

Alignment for the new road follows the left bank of the stream and generally parallels the Union Pacific Railroad tracks which lead up the river bank. Dredging by General Construction Co. will establish a fill 45 feet wide at the crest, with 3 to 1 sideslopes. Other work, under contract to Kuckenberg Construction Co., is providing a rock toe to contain the hydraulic fill, and a supplementary contract will furnish a blanket of rock-riprap wave protection to prevent scour of the sand fill.

Dredge Washington No. 3

General Construction Co. assigned its 24-inch hydraulic dredge Washington No. 3 to dig the material. This dredge is partly new and partly old. Its wood hull was built back in 1916, but its Sperry gyrocompass was added in 1949. Between those two dates the dredge was added to, rebuilt, and altered in many ways.

At present, the wooden hull is 109 feet 9 inches x 36 feet x 11 feet 5 inches. It has a ladder well 27 feet 10½ inches x 11 feet 5 inches. The spuds are gantry-mounted and hang through bolted steel gates externally supported on the dredge hull. They are 30 inches square, 85 feet long, and are made of Douglas fir. Each spud has steel points. A steel weight tank which can be filled with water has been added at the top of each spud to help sink the points in deep water or a hard bottom.

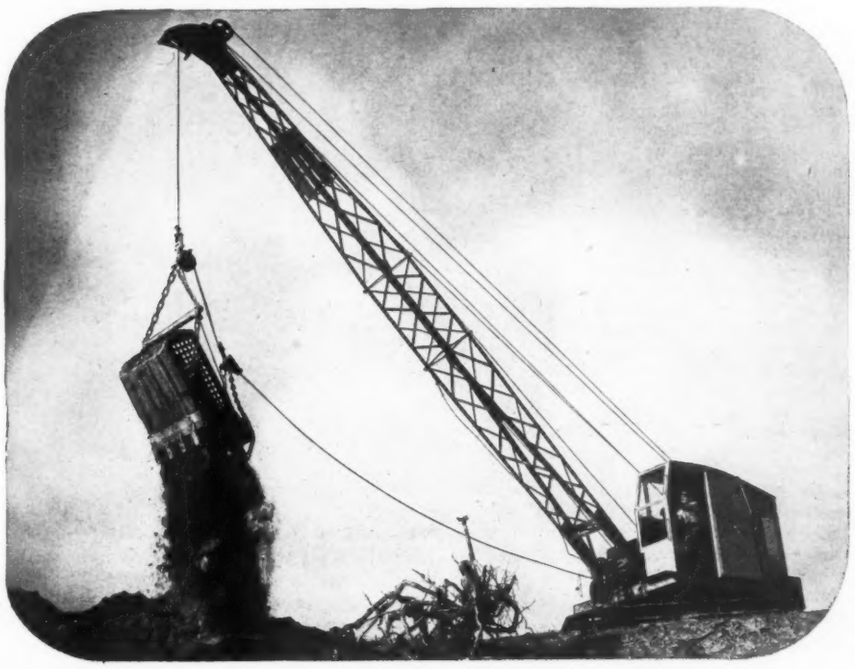
Wherever shore-transmitted electric power is readily available, it is purchased through a substation and carried to the dredge by approximately 4,700 feet of submarine cable. Where a job is too small to set up a substation, or too remote from established power sources, a power barge is used. The power barge carries three 1,000-kw Elliott generators, each driven by a 1,750-hp General Motors diesel engine. There is also a 125-kw GM-driven generator on the power barge. It is used for lights and auxiliary purposes. Power from the barge is stepped up from 2,300 to 12,500 volts, carried to the cable scow near the dredge, and stepped back down to 2,300 volts for use on the main units. Some is also stepped down to 440 and 110 volts for use on secondary units and lights.

A 1,600-hp Westinghouse electric motor drives the dredge pump. A 75-kw generator, driven by a 6-cylinder Buda diesel engine, is also on board. It is a handy piece of equipment, for it lets the operator raise spuds or ladder, use the lights, or move the anchor gear when the dredge is shut down for short periods of time and disconnected from its power source.

Three service pumps, electrically powered, maintain fire pressure and allied service aboard the rig. Two are powered by 60-hp motors; one has a 50-hp motor. There are several small bilge pumps that are used to keep the hull dry.

(Continued on next page)

WIRE ROPE



This is the most economical rope we've ever made for construction equipment

ROEBLING is the best known name in wire rope. That's partly because we were the first wire rope maker in America. But more than that, we've always led in developing better wire and better rope for every purpose.

Today's Roebling Preformed "Blue Center" Steel Wire Rope is the best choice for efficiency and long life on excavating and construction equipment. This rope has *extra* resistance to crushing and abrasion . . . stands up under rough going. It saves you time and cuts costs.

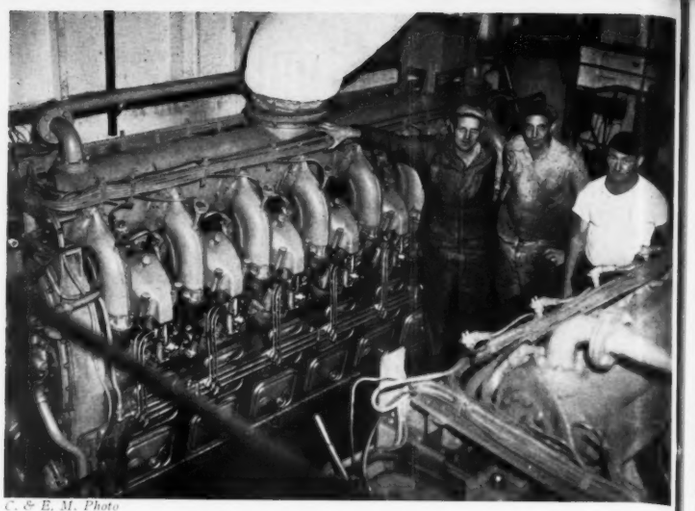
There's a Roebling wire rope of the right specification for top service on any job. Call on your Roebling Field Man for his recommendations. John A. Roebling's Sons Company, Trenton 2, New Jersey.

ROEBLING

ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 701 ST. CLAIR AVE., N. E. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

C. & E. M. Photo

M. C. McLain, Chief Engineer of General Construction Co.'s dredge Washington No. 3, inspects the Esco dredge pump.



C. & E. M. Photo

On the power barge, Oiler Dan Kattu, Chief Engineer W. E. Burger, and Mechanic Whitmarsh stand beside a GM diesel.

Dredged River Fill To Realign Highway

(Continued from preceding page)

Pump Stroboscopically Balanced

The 24-inch pump is located amidships, on a straight-line drive connection from the 1,600-hp motor. The pump was designed and built to General Construction Co. specifications by Electric Steel Foundry Co. of Portland. An inspection manhole, hydraulically opened, is mounted in the "Dutchman" connection in the intake just ahead of the pump.

Impellers run from 51 to 63-inch diameters and have 4 vanes. The pump has removable liner plates. Hard-facing to combat abrasion consists of Abrasoweld and Airco No. 10 Moly welding rod, applied usually on Sunday when the dredge is shut down for routine maintenance.

When pump impellers first come out of the Electric Steel Foundry factory, they are statically balanced to near-perfect tolerance. As the impellers wear, and welders build up the metal here and there, they invariably get out of balance. Frequently an impeller is so out of balance that it shakes the pump. Often the vibration is so bad that a log in the intake is blamed.

Chief Engineer M. C. McLain has solved that problem by using a Stewart-Warner stroboscopic wheel balancer to check the impeller at operating speed—350 rpm. He got the idea of using such an instrument one day when a garage mechanic was balancing the wheels on his automobile with one of the machines. Adding welding rod opposite the point where the unbalance is heaviest—as indicated by the "strobe"— returns the impeller to balance and smoothness.

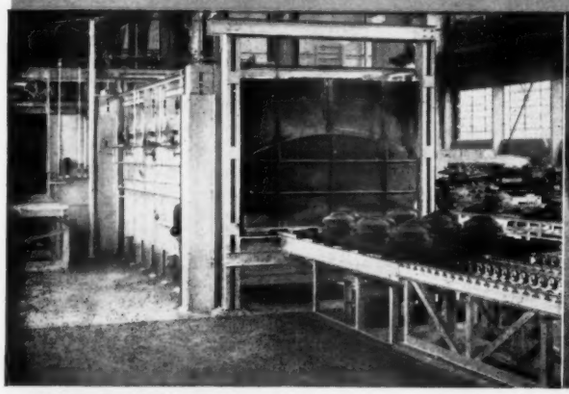
Cutter, Ladder, Pipelines

Mounted on the forward end of the dredge is a 69-foot 50-ton straight steel ladder, containing the 26-inch suction pipe and the cutter and its shaft. The cutter is a 5-blade open type. It is driven through a set of trunnion gears by a 400-hp motor.

Also on the bow end is a 5-drum winding gear, which controls the dredge swing and spud hoist. A 2-speed motor, delivering 25 or 65 horsepower, powers this winch arrangement. Average length of swing cables is 500 to 600 feet. Ordinary marine anchors are used wherever there is water enough to float an anchor scow. Dredging on this project is being carried down 55 feet below water surface to recover the big yardage necessary. In the control room are various pressure and vacuum gages and instruments for accurate underwater excavation. A

(Concluded on next page)

SMOOTH, STEADY OPERATION of this ¾-yd. 22-B dragshovel is shown during finishing work on a large basement in Los Angeles, Calif.



SHOCK-RESISTING HARDNESS is given castings treated in this new, completely automatic heat-treat furnace. Such pre-assembly care pays off later in long machine life.

MODERN FOUNDRY METHODS are exemplified this electric furnace in operation. In its own foun Bucyrus-Erie has pioneered in the development steels especially suited for excavating equipme

Sperry gyrocompass has recently been installed to give the operator better control over the width of his cut.

Pipelines include both floating and land types. Floating lines have special joints cast by Esco to General Construction Co. specifications. These lines are pontoon-mounted and have catwalks with a cable guardrail. The pipeline hooks to the stern of the dredge by means of a ball-and-socket joint with a Neoprene seal.

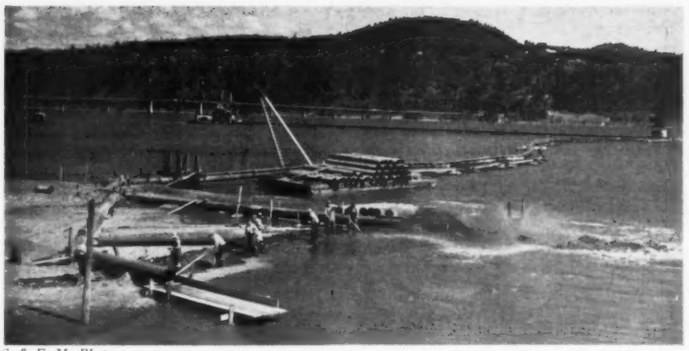
Dredging Method

The dredging superintendent is taking advantage of a 7-foot spring freshet on the Columbia River to get a foundation course of fill laid as far as possible. It matters little how much the dredge will dig; what is much more important to the superintendent is how much of the material he can hold on the fill. The best material for hydraulic fill is the coarse basalt sand found in the stream bottom, and the dredge is pouring from 15,000 to 30,000 cubic yards a day of this material shoreward. Pipelines are usually short, with the longest total line distance about 6,000 feet.

In some places the hydraulic roadway fill will be approximately 30 feet deep, rising about 20 feet above the present spring-freshet stage. Stone for toe protection is placed by the Kuckenberg contract. Then the dredge pumps a foundation course, filling up several feet above the water surface. A Caterpillar D8 with dozer comes in next and builds a sand dike along the slope line. The dredge then pumps within this dike, and finally, after several cycles of diking and pumping, completes the fill. The slope is then dressed by the dozer, and is ready for wave-protection riprap.

Lumber platforms and baffle boards are also used at the ends of the dredge discharge line to make the sand drop inside the project limits. Material which runs back into the river is naturally of no value to the roadbed.

The dredge works 24 hours a day, 6 days a week. The contractor hoped to carry on the hydraulic operation through the winter, and to complete the fill some time this year. Another link of the scenic Columbia River Highway will then be a reality.



C. & E. M. Photo

The discharge area at the end of the pipeline on the Columbia River Highway project. In the background are the floating line and dredge.

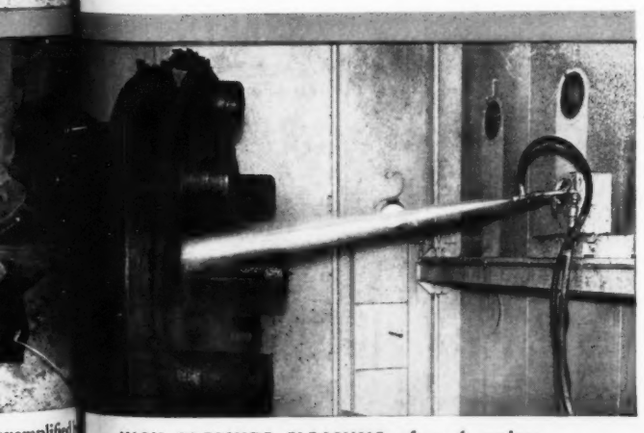
Here's Why You Buy Quality When You Buy Bucyrus

OR 71 years the most-wanted excavator line in the contracting field—that's Bucyrus-Erie! Such year in, year out preference reflects the quality built into every Bucyrus-Erie machine — the result of the industry's largest full-time engineering staff, with an unmatched background of field experience, plus thorough laboratory tests of all materials. Such rigid manufacturing controls combine with careful field testing to produce a machine that **you know** will perform exactly as specified.

To a contractor engaged in the most extensive building program in America's history, this close attention to quality means that you'll have a machine that will take tough going in stride for many years to come . . . one that will offer fewer maintenance problems — produce higher output records with less downtime.

While heavy defense demands are in effect upon manufacturers of excavating equipment, it will pay you to see your Bucyrus-Erie distributor now for the delivery picture on this "quality proved" line of ⅜- to 4-yd. gasoline, diesel and single-motor electric excavators. They're worth waiting for!

308E51C



HIGH PRESSURE CLEANING of rough castings with sand-water-blasting equipment is but one of the high-grade casting-cleaning methods employed before precision machining.

Most Compared Most Preferred

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

New Wax Lubricant For Sanding, Sawing

A blend of special solid waxes in stick form for metal sanding and sawing, pipe cutting and threading, drilling, tapping, grinding, and flush riveting is announced by S. C. Johnson & Son, Inc., Racine, Wis.

Lubrication with No. 140 Stik-Wax, Johnson says, extends the life of saws, drills, and cutting tools as well as sanding and grinding surfaces. It is also said to provide a better finish on the worked pieces. Burrs are eliminated when metal is cut or drilled, and a smooth finish is achieved when grinding or sanding metal surfaces.

Stik-Wax can be applied manually by the operator or set in a position so that it is automatically applied as the machine operates. Each stick of wax is 2 inches in diameter and weighs a pound.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 743.

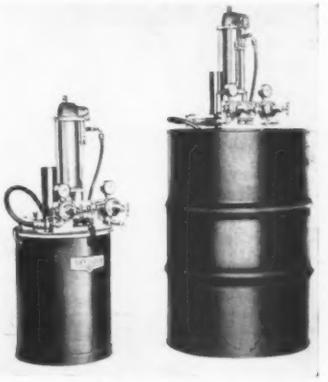
Paint-Supply Pumps

Two new paint-supply pumps for maintenance painting are announced by The DeVilbiss Co., Toledo, Ohio. One is used with 55-gallon drums, and the other comes with a 10-gallon hinged-lid tank that holds a 5-gallon paint container. Both are adapted for direct hose-line connections used to operate up to six spray guns.

For maintenance painting, the pumps are convenient and time-saving. Spray guns operate directly from the pumps and work steadily over an area limited only by the practical reach of hose lines.

An automatic bypass valve enables the pump operator to maintain paint mixtures at correct consistencies. Used with a long length of hose or pipe, the pump develops a delivery pressure up to 200 pounds.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 763.



The DeVilbiss P-QBD paint-supply pumps are said to bring the advantages of large-scale paint-circulating systems to small-scale maintenance painting. Two models are available.

Latest addition to the Jaeger Machine Co.'s line is this 3½-foot-capacity plaster-mortar mixer.

Plaster-Mortar Mixer

A new plaster-mortar mixer is announced by The Jaeger Machine Co., 701 Dublin Ave., Columbus 16, Ohio. It has a 3½-foot capacity, four mixing blades, and 34-inch shoveling height for fast, easy loading. It features leak-proof Neoprene bearing seals and Timken bearings on the blade shaft, an automotive-type transmission, a Wisconsin engine, and a drum of extra-heavy gage.

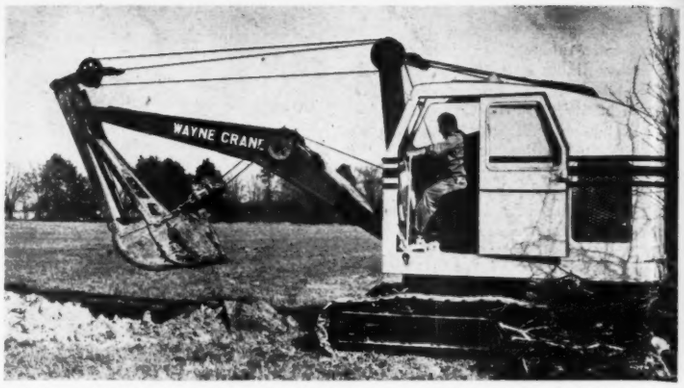
Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 781.

New Trench-Hoe Boom

A heavy-duty camel-back boom has been developed for use with Wayne Crane excavators. It is said to increase the reach of the Model 66 ½-yard crawler to 26 feet 3 inches at grade level, and allow a digging depth of 17 feet 3 inches. The camel-back feature permits the operator to make a clean-cut vertical backwall to maximum depth.

According to the manufacturer, the boom increases over-all operating efficiency, gives greater dumping height, and reduces spill-over. Conventional reeving through large interchangeable sheaves eliminates reverse cable bend, minimizes cable wear, and simplifies attachment changeover.

Further information may be secured from the Wayne Crane Division, American Steel Dredge Co., Inc., 2000 Taylor St., Fort Wayne, Ind. Or use the Request Card at page 16. Circle No. 774.



This camel-back boom for Wayne Crane excavators increases the reach of the Model 66 ½-yard crawler to 26 feet 3 inches at grade level and allows a digging depth of 17 feet 3 inches. It is reported to increase efficiency and reduce spill-over.

Data on Line of Graders

An 8-page catalog describing a complete line of graders is announced by J. D. Adams Mfg. Co., 217 S. Belmont Ave., Indianapolis 6, Ind. It illustrates motor graders at work on streets and roads, terracing, logging, and plowing snow. It shows the TraveLoader on summer and winter loading operations and gives information on the pull-type graders. Brief specifications and views of all the units are included.

This literature may be obtained from the company by requesting Form 5110, or by using the Request Card at page 16. Circle No. 724.

U. S. Plywood's New Units

United States Plywood Corp., New York, N. Y., has opened new sales and distribution units in Nebraska and North Carolina. The Nebraska office, at 1806 N. 13th St., Omaha, is under the management of L. T. Peeler, who has been with the company for 13 years. The North Carolina branch is at Prospect St. and Railroad, High Point, and replaces a smaller building which had served the Carolina area since 1941. Charles W. Perry, 14 years with U. S. Plywood, is in charge.

Both branches carry a complete line of soft and hardwood Weldwood plywood and many other allied Weldwood products.

"Let the shovel go . . . but hang on to that DIPPER"

When the preference for an Amsco Dipper is so strong that a superintendent at one of Minnesota's largest iron mines quietly removes it from a shovel being shipped to another mine, there are apt to be some good performance reasons why!

The superintendent reported that this AMSCO 6½ yard renewable lip dipper *loaded a record number of tons per 8 hour shift*—more than had ever been loaded before. And, where other dippers needed repairs every 2 months or so, it is still going strong after 6 months of service with no repairs of any kind!

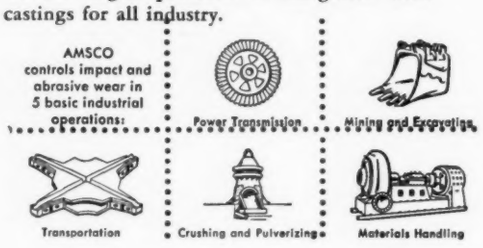
Better design and construction are the reasons for this high production and longer, uninterrupted service. The wide mouth and shallow depth permit faster, easier digging and loading, and a 4-way taper insures clean dumping every time.

And, this dipper is *all-cast*—of tough, work-hardening AMSCO Manganese Steel. The renewable lip and heel plate, when finally worn, are replaceable in a matter of minutes.

Dippers can—and should be—bought with an eye to higher digging efficiency and lower costs per ton . . . and the moral of this actual on-the-job example is clear . . .

WHEREVER YOU MEET A PROBLEM OF WEAR CAUSED BY IMPACT AND/OR ABRASION . . .

. . . find out about longer-lasting, dollar-saving Manganese Steel Dippers made by AMSCO . . . world's largest producer of manganese steel castings for all industry.



Brake Shoe

AMERICAN MANGANESE STEEL DIVISION

395 EAST 14th STREET • CHICAGO HEIGHTS, ILL.

Other Plants: New Castle, Del., Denver, Oakland, Cal., Los Angeles, St. Louis. In Canada: Joliette Steel Division, Joliette, Que.
Amsco Welding Products distributed in Canada by Canadian Liquid Air Co., Ltd.

FOUNDATION CONSTRUCTION

•

CAISSONS SHAFTS

DRILLED AND UNDERREAMED

PIERS

•

SPECIAL DRILLING PROBLEMS

•

Wire or phone for a quotation on your next foundation job—

ANYWHERE IN THE WORLD

McKINNEY DRILLING COMPANY

NACOGDOCHES, TEXAS

Phones: 1195 - 1053 • P. O. Box 190

The Fleco Tree Cutter has a protruding horizontal member on top which bends the tree as the impact of the horizontal cutting blade shears through the stretched fibers at ground level.

New Bulldozer-Type Tree-Cutting Device

A bulldozer-type tree-cutting device for land clearing is announced by Florida Land Clearing Equipment Co., P. O. Box 2317, Jacksonville 3, Fla. Attached to the standard operating arms of a bulldozer, the new cutter has a protruding horizontal member on top which bends the tree as the impact of the horizontal cutting blade shears through the stretched fibers at ground level.

To attain the cleanest cut, the leading edge of the cutting blade is raised slightly. In light clearing, the unit can cut completely through on the first contact. With trees over 8 inches in diameter, it makes a preliminary notch and then with the tractor in a higher gear, shears through from any one of the other three sides. Soil conditions also determine the choice of gears.

The high-carbon steel cutting blade has a straight edge which simplifies sharpening. The company points out that the cutter can be pushed along the ground and will not bury itself like a bulldozer blade.

The new unit is said to be most efficient in areas where it is undesirable to remove roots and stumps. It cuts and partially piles all but the largest and inaccessible trees, leaving this job for chain-saw crews.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 757.

New 18-Ton Dumper With Axle Feature

An 18-ton dump truck for stripping and quarry operation has been announced by the Sterling Division of The White Motor Co., 2021 South 54th St., Milwaukee 1, Wis. It features a planetary-drive rear axle with a differential that divides the power delivered to each rear wheel according to the grip dictated by road and load conditions. When traction is poor in mud or on slippery roads and runways, the greater portion of the pulling power is transferred to the wheel having the best grip. This eliminates almost entirely the spinning of either wheel and permits operating under roadway conditions that would otherwise stall the vehicle.

Also incorporated in the planetary-drive rear axle is the Tri-Pinion Drive. This gear arrangement, with the internal ring gear rotating around the sun gear and the idler or intermediate gears rotating on fixed centers, permits the use of larger and huskier gears within the available space. In addition the power is applied at a greater radius from the wheel center.

For ease in maneuvering under a shovel, the unit has a short 161-inch wheelbase and a hydraulic power-actuated steering gear. The most efficient speed for every operating condition can be selected from a range of ten forward speeds in the heavy-duty transmission. Tires are 13.00 x 24 front and 14.00 x 24 dual rear with a tough lug-type tread especially designed for operating on rough, unimproved surfaces.

The planetary-drive rear axle on this Sterling 18-ton dump truck has a differential which divides the power delivered to each rear wheel according to the grip.

A white oak wood insert lines the entire length of the frame to absorb road shocks and provide a 2-inch bearing surface for the bolts, used instead of rivets. This bolted construction greatly simplifies maintenance, the company claims.

Further information on the trucks may be secured from the company. Or use the Request Card at page 16. Circle No. 722.

The
BACHTOLD MOWER
with attachments
does more jobs

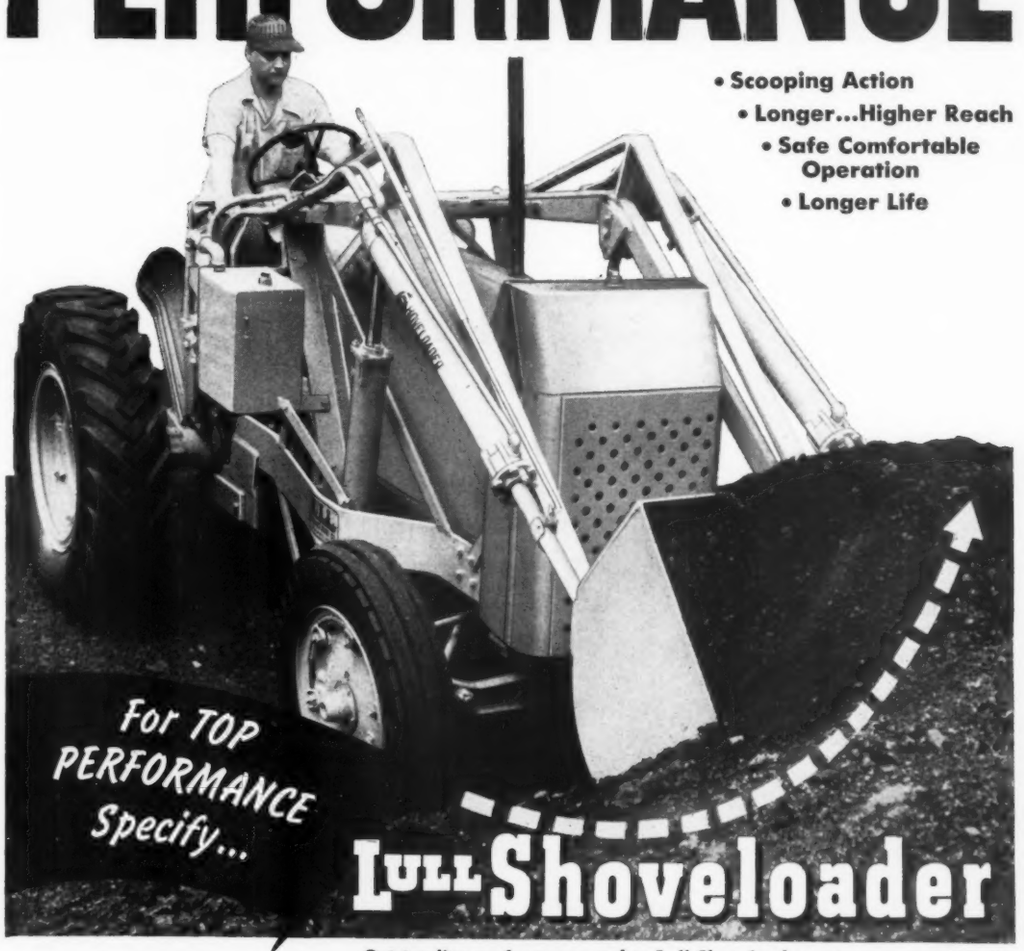
It SAWS. Big 20" saw blade can be used in either horizontal or vertical position. Powerful, fast.

It MOWS right up to bushes, trees, buildings, etc., cutting a 28" swath evenly. Adjustable runner. It CULTIVATES almost any kind of soil.

•Easy starting •Finger-tip control •Portable
•Compact •Fully guaranteed •Push-type and self-propelled-type models

BACHTOLD BROTHERS, INC. Forrest, Illinois

NOTHING PAYS OFF LIKE...
PERFORMANCE



• Scooping Action
• Longer...Higher Reach
• Safe Comfortable Operation
• Longer Life

For TOP PERFORMANCE Specify...
LULL Shoveloader

LULL SHOVELOADERS are specially engineered to mount on and utilize the full power of industrial wheel-type tractors.

Outstanding performance makes Lull Shoveloaders top money-makers in the construction business. Field competition has proved time and again that Shoveloaders can move more material . . . faster and at lower cost than any comparable machine.

A clue to Shoveloaders' performance is the faster and smoother loading cycle. (1) Shoveloaders' powerful crowding action scoops up heaping buckets at every pass. (2) Shoveloaders' full hydraulic control gives the operator finger-tip command of hoisting, tilting and dumping. (3) Shoveloaders' higher lift and longer reach load trucks and bins from one position—cuts backing, turning, and blocking of traffic.

Learn how you can profit by Shoveloader performance.
See your Lull Distributor, TODAY . . . or Write to:

LULL Manufacturing Company
322 W. 90th St. • Minneapolis 20, Minn.

The Wonder Disker breaks up hard-packed ground for grading or seeding. It features 24-inch cutout blades and a rear-mounted weight carrier.

Heavy-Duty Disker

A heavy-duty disking unit for grading and reclamation work is manufactured by Orkil Inc., P. O. Box 208, Hartford 1, Conn. The Wonder Disker consists of single or tandem sections with four or five cutout disks to a gang. Rear-mounted weight carriers give the unit extra penetrating power for deep cutting.

With its 14 per cent additional cutting edge, the cutout-type disk is said to pulverize hard ground or turf more easily than a plain disk. The 6-foot unit uses eight 24-inch disks and the 7½-foot model ten 24-inch disks.

The structural frame is made of heavy channel and angle steel. Spring-steel draw arms operated by a hand rope move the disk gangs to any one of seven positions. Adjustable disk cleaners are standard equipment.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 739.

Pavement Coating

A coating which protects asphalt and concrete pavements is produced by Continental Coatings Corp., 304 E. 44th St., New York 17, N. Y. Conseal is said to fill cracks, resist weathering, and withstand heavy loads. It is premixed and can be spread by a spray gun or squeegee.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 712.

New Submersible Pump

A ⅓-hp submersible sump pump has been developed by Lancaster Pump & Mfg. Co., Inc., Manheim Pike, Lancaster, Pa. The all-bronze Drain-Pak, with stainless-steel motor housing, weighs 31 pounds and can pump 3,300 gallons per hour at depths to 15 feet. The company points out that the absence of a float, a diaphragm, or electrodes, practically eliminates maintenance problems; nor is lubrication required at any time.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 742.

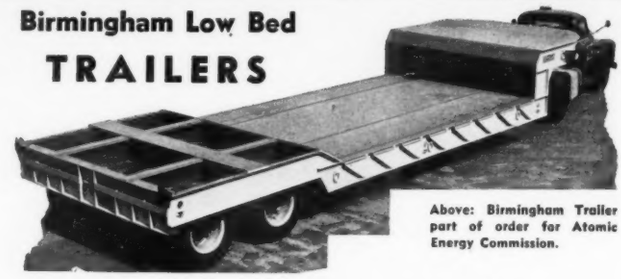
No float, no diaphragm, and no electrodes—nothing to go wrong with the Drain-Pak submersible sump pump.

BTEA Election of Officers

At the annual meeting of the Building Trades Employers' Association in New York City last February, officers were elected for 1952. Fred J. Driscoll, President of the George F. Driscoll Co., general-contracting firm, was re-elected President. Other re-elected officers are: Vice President—Harry J. Stellmann, Starrett Bros. & Eken; and Second Vice President—William B. F. Drew, of J. L. Murphy, Inc. The new Third Vice President is Joseph A. Courter, President of Courter & Co., Inc. Treasurer is William Angus, President of William Angus, Inc. W. Arthur Riehl was reappointed Secretary of the Association.

The BTEA is an organization whose members comprise 1,000 general and specialty contractors.

Birmingham Low Bed
TRAILERS



Above: Birmingham Trailer part of order for Atomic Energy Commission.

Standard models, or made to special design to meet your needs. Illustrated above is Model 131-16100 DLU, capacity 100 tons. This model is equipped with swinging side brackets, which increase 12' wide bed to 15' wide when brackets are extended. Frame electrically welded, open hearth steel shapes. Birmingham trailers give you greater load capacity, ease of handling and rugged wear.

See us or our Distributors for special designs, catalog and prices.

BIRMINGHAM MANUFACTURING COMPANY, Inc.
P. O. Box 1351, Birmingham, Alabama

Saves 25 weeks of form erection time with help of TIMKEN® bearings

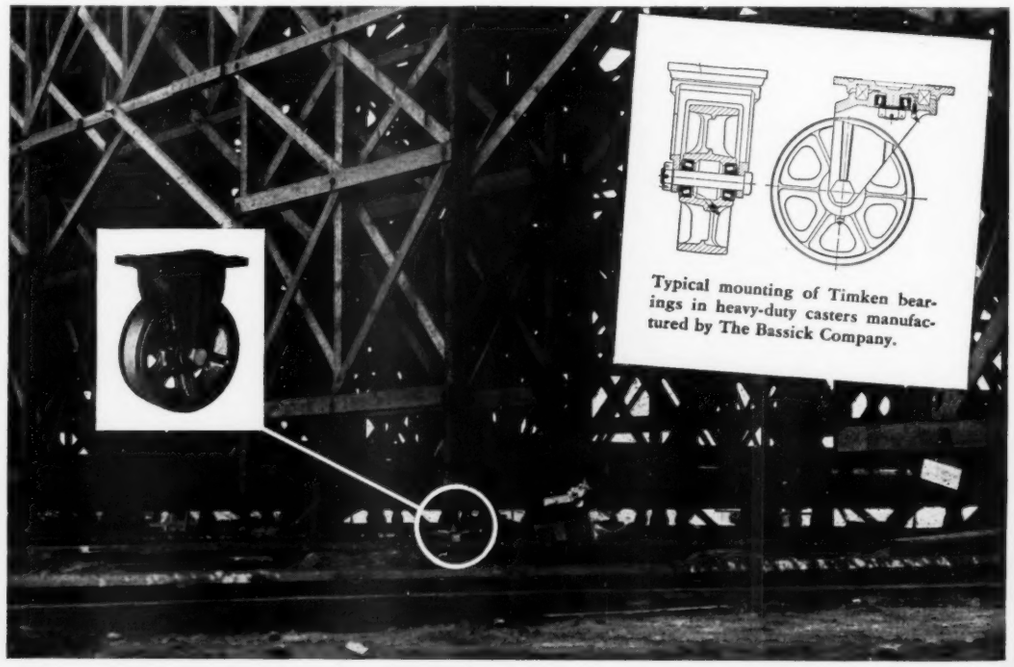
USE of the traveling arch centering, below, saved an estimated 25 weeks form erection time and substantial amounts of labor and materials in construction of the new Denver Municipal Stadium. Serving as multiple forming for pouring six sections of the stadium's 5,400 ton concrete roof, the traveling arch centering was mounted on 100 five-ton Bassick V-groove wheels.

Bassick wheels were used to carry the traveling arch centering because they minimize friction even when carrying tremendous loads. One way The Bassick Company builds this friction-free performance and large load-carrying capacity into its wheels is by mounting them on Timken® tapered roller bearings.

Timken bearings have extra load-carrying capacity because of line contact between rollers and races. They operate freely, frictionlessly because of their true rolling motion and the smooth surface finish of rollers and races. Wheels turn easily, don't stick or slide.

Timken bearings are engineered for the job, precision manufactured and made of Timken fine alloy steel. They give you more advantages than any other bearing. Make sure you have Timken bearings in the construction equipment you buy or build. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



Typical mounting of Timken bearings in heavy-duty casters manufactured by The Bassick Company.

DESIGN LEADERSHIP
The first Timken tapered roller bearing was produced in 1898. Since then the one-piece multiple perforated cage, wide area contact between roller ends and ribs, and every other important tapered roller bearing improvement have been introduced by The Timken Roller Bearing Company.

The Timken Company leads in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis steels.

TIMKEN
TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◎ AND THRUST ◎ LOADS OR ANY COMBINATION

Portrait in Print

By BILL QUIRK

The Man Behind the Men Overseas

• FROM the eleventh-floor office in the Munson Line Building in downtown Manhattan, a visitor to the New York City headquarters of the Construction Men's Association can look out over the East River and see ships entering and leaving the harbor. Inside the compact three-room suite at 82 Beaver Street, he can brush up on his geography by studying the maps of foreign countries that line the walls. Not so long ago these countries were referred to as "far-off". The four-engined airplane now puts them only a matter of hours, instead of days and weeks, away.

Just as ships need wharves and docks, these big planes require bases—bases with long runways—in the countries to which they fly. They must be built by men who know how—construction stiffs they are usually called, a term tinged with tolerant humor and a little awe. For these men, still imbued with an unquenchable pioneer spirit, command respect for the mighty things they have accomplished far from their homeland and usually under conditions that tax their physical and their mental capacities.

Behind a desk piled high with papers and a prominently displayed CMA-lettered sign that lights up, sits a little man who probably knows as much about what is going on in overseas construction as a cadre of top Washington brass. James H. Dillon, President and Executive Secretary of the Construction Men's Association, Inc., is the man behind those men overseas. He does everything from representing this organization at a Government hearing, to serving as a crying towel when one of his boys complained that while he was out of the country his wife ran off with another man.

A Stiff Himself

Dillon is as colorful as any of the 10,300 CMA craftsmen and technicians who make a career of working on projects in foreign countries for American construction firms. He was a construction stiff himself for 25 years, and for 20 of them he roamed the globe from South America to Africa and Asia. Standing 5 feet 2 inches, and weighing about 135 pounds soaking wet, Dillon is a self-assured, somewhat cocky individualist who looks as if he could take care of himself no matter how rough things got. As shy about his age as a coquettish old maid, he admits only to being over 21, but is probably around 50. He and his wife now make their home in New York.

Nothing came too easy for the doughty Dillon ever since he left his native Pecos in west Texas to wield a pick and shovel on the Atchison, Topeka & Santa Fe railroad. He has been a muleskinner, gandy dancer, labor foreman, and construction superintendent. Back in the early 30's, when the depression made construction workers a drug on the labor market, Dillon enrolled at New York University for some courses in personnel and business administration. After that training he got into the so-called white-collar work of personnel management with various large construction firms.

Coming back from Africa in 1943, after completing a World War II military base, Dillon and about 500 of his co-workers planned to hold a dinner in the States. After the cigars the group began to wonder what they were going to do about future employment. The men sensed the need of a mutual welfare organization that would serve as a central clearing house of information for construction workers outside the country. So the following year the Construction Men's Association, Inc., was chartered, and in 1945 Jim Dillon became its head. From the start contractors regarded it as a good labor pool when hiring men for overseas work.

C. & E. M. Photo

Meet James H. Dillon, President of Construction Men's Association, in his New York Office.

Rapid Growth

From a beefsteak dinner the CMA expanded rapidly. Far from putting a finish to overseas construction, the end of the war served only as a breather before the tempo of building new bases and expanding existing ones was stepped up and up. At present there are reported to be some 183,000 workers engaged on more than 100 projects in foreign countries. Not all are "defense" bases, for private industry as well as the Government is playing a prominent part in foreign construction.

This overseas activity has helped CMA, of course. Besides its headquarters in New York it has a branch office at 60 Market St., San Francisco. However, only about 5 per cent of all construction workers outside the States are CMA members, and Dillon naturally would like to increase the ranks of his 10,300 to where the CMA would

(Continued on next page)

Jobs Done Quicker, Cheaper

Attached to Tractors, Bulldozers, Motor Graders and Scrapers, the Automatic Slope-Meters are in use on the construction of highways, airports, dams and building sites. Slope-Meters are compact, sturdily constructed instruments that will automatically show the operator the exact grade or slope on which he is working.

Order from Your Equipment Distributor Today

OR

THE SLOPE-METER CO.
EXCELSIOR, MINNESOTA

To drive home the facts . . .

on the uses and advantages of

FOSTER RENTAL STEEL-SHEET PILING

this valuable

Free Bulletin

is yours for the asking

The story of how 7 big contractors—on 7 big jobs enjoyed savings, convenience, and dependability on their steel sheet piling requirements. Illustrated for your use in planning are diagrams and dimensions of the more popular sections of Interlocking Steel Sheet Piling. You'll learn that it pays to Rent from Foster—to get the exact lengths and exact sections your job requires—at Foster's low rental rates and without costly capital investment.

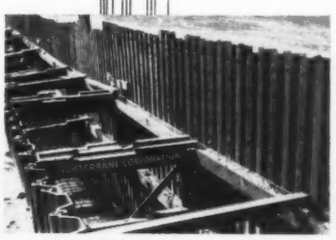
WRITE NOW—let us quote you on Foster's Rental rates for your current requirements. Write your nearest Foster office for Bulletin CE-4.

Everything for INDUSTRIAL TRACK • PIPE • WIRE ROPE

L.B. FOSTER CO.

PITTSBURGH 30, PA. • CHICAGO 4, ILL.
HOUSTON 2, TEX. • NEW YORK 7, N.Y.

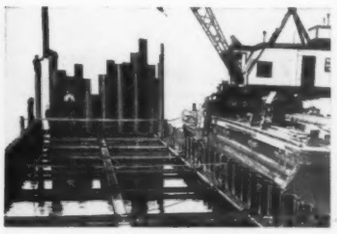
Western Foundation Corp. and Spencer, White & Prentis, Inc., contractors for Union Electric Light & Power Co. plant.



The Subterrane Corp., contractors for Owl's Head Sewage Treatment Works Project, Brooklyn.

Daniel O'Connell's Sons, Inc., contractors for Holyoke Water Power Co. new plant, Holyoke, Mass.

Fish Constructors and Oklahoma Contracting Corp. contractors for Transcontinental Gas Pipe Line Project, New York section.



Frederick Snare Corp., contracting engineers for Lawrence-Atlantic Beach Bridge, Nassau County, New York.

Morrison-Knudsen Co., Inc., contractors and engineers for Jones & Laughlin Steel Corp. plant expansion, Pittsburgh.

RENT STEEL-SHEET PILING ALL LENGTHS • ALL SECTIONS FASTER FROM FOSTER

Man Behind the Men Who Build Overseas

(Continued from preceding page)

carry even more weight than it does at present. The Construction Men's Association is neither a labor union nor an employment agency, but its mutual welfare objectives are broad enough to range from protecting its members from exorbitant fees levied by employment agencies, to making sure that a good cup of coffee is provided by contractors' commissaries.

Dillon recently stirred up something of a hornet's nest when he testified before the Senate Preparedness Investigating Subcommittee that private employment agencies were milking overseas workers to the tune of 5 per cent of their full yearly pay, including overtime. He calls it slavery, and accuses the agencies of selling men to employers and forcing the men to pay for being sold. The fiery ex-Texan stated that in his opinion there is collusion between some personnel managers of construction firms and a few employment agencies.

One agency slapped a suit against Dillon for his charge of "kickbacks and rackets". But the CMA spokesman went ahead to get a bill through Congress making it mandatory for all jobs on U. S. government-financed foreign construction projects to be filled through the U. S. Employment Service, except of course when contractors prefer using their own recruiting facilities.

The Big and the Small

Dillon keeps CMA members informed of projects that need the kind of services they have to offer. His roster includes every type of skill required on a big construction job from project manager down the line through superintendents, engineers, surveyors, office help, equipment operators, skilled workers such as carpenters, plumbers, masons, electricians, machinists, blacksmiths, powder men, pipe layers, steam fitters, and so on, even including aviators.

Each month CMA members receive a confidential bulletin, "What's Cooking", that keeps them abreast of developments of direct concern such as foreign income taxes, Federal old-age benefits, insurance, pending legislation, legal advice, and job listings. The latter is primarily made up of foreign jobs, but domestic opportunities of any size are also included.

While the CMA does not guarantee jobs to its members, it does offer them complete information on work available including kind of project, location, size, cost, contractor, length of contract, type of positions open, and where to apply. Contractors hard-pressed to recruit skilled men for their overseas projects find the CMA members, as a whole, an elite group of pros who are specialists in their line and experienced in foreign fields.

Members pay an initiation fee of $15, and $10 a year dues. For this they get, besides job information, the feeling that they are represented by an association that is looking after their interests when they are out of the country and in no position to do such things for themselves. Current objectives of the CMA are: to obtain a standardized form of contract for work abroad; simplification and improvement of procedures for handling employees' claims and complaints; social-security benefits; and modification of unfair age limits.

While these are some of the big targets at present, Dillon is practical enough to lower his sights and aim at correcting some of the little things that have been annoying his men from the Aleutians to Africa. Such a grievance is the poor quality of coffee served at many projects. The CMA chief includes good coffee as a morale builder along with letters from home, adequate pay, and satisfactory food and lodging. He is fond of citing a project in New Guinea, where tea is the favored drink. American employees urged that both tea and coffee be served. The chef obliged by brewing both together and serving them as a mixed drink!

The CMA gets action by appeal to the employers, or by not recommending jobs on certain projects until complaints are corrected.

More Bases

The growing importance of the overseas worker is emphasized by the stepped-up crash program of construction on U. S. bases all over the globe. "Crash" in the current military jargon means that speed is imperative. These bases are chiefly for the development of Air Force facilities, which by the middle of the year are expected to include 131 airstrips. Some are new and modern enough to handle big bombers and fast jet fighters, while at others the runways are lengthened and depth of pavement increased to meet revised requirements. In location they really girdle the globe from the south latitudes of New Zealand to the Blue Jay project above the Arctic Circle in Greenland, where a 10,000-foot runway will provide a roost for the war birds.

Pinpoints on a huge map of the world along a wall in the CMA office locate most of these overseas projects. Dillon, sucking a pipe, pointed out the deployment of his construction stiffs like a general briefing his staff officers on a military campaign. "During World War II we ran our string of bases from the Caribbean across to Africa. Now we have extended that line into Greece and Turkey", he explained. "Bases in Spain will come next most likely."

"Biggest of them all at present is the $500,000,000 project in French Morocco, North Africa, where two new 11,000-foot airstrips have already been built near Nouasseur and Sidi Slimane on the Atlantic Coast, and three more similar strips are under way. Atlas Constructors, a joint venture of five big American contractors—Morrison-Knudsen, Bates & Rogers, Ralph E.

(Continued on next page)

"172 to 181 tons per hour average

That's why I like Cedarapids"
says, C. C. LINCK
Beaver Dam, Wisconsin

CLARENCE C. LINCK
ROAD CONTRACTOR

Agricultural Lime — Washed Sand and Gravel — Road Gravel

Phone 5066 — BEAVER DAM, WISCONSIN — Job Address Beaver Dam, Wis.

February 9, 1952

Mr. Kenneth Lindsay
Vice President – Sales Manager
Iowa Manufacturing Company
Cedar Rapids, Iowa

Dear Ken:

I know you are always interested in the production of your equipment, so I want to tell you what I'm getting from one of our Junior Tandems.

On Highway 30 in Waukesha County, Wisconsin, I produced 93,095 tons of minus 1" material in 541 hours for an average of 172 tons per hour. On Highway 57 in Calumet County, I produced 61,992 tons of minus 1" in 341 hours for an average of 181.8 tons per hour. All finished materials were produced without any primary breaker, and we were operating in gravel pits that contained 50% stone.

These quantities were originally figured in cubic yards, but I've transposed the figures to tons, using 3000 lbs. per cubic yard as a base figure. This may seemtoo high as weight per yard, but it actually ran more than that. The quantities listed above are recorded with the State Highway Department.

I guess it's obvious why I like Cedarapids equipment! The main reason is the Horizontal Vibrating Screen on my Junior Tandems which are consistently producing from 20 to 25% more yards per hour than other plants I've used. These screens give me absolute accuracy to meet the strictest specifications. Other definite advantages of the Cedarapids plants are the V-Belt drives, and the fact that bearings from various parts of the plant are interchangeable throughout the plant.

Yours truly,

C. C. Linck

C. C. Linck

CCL:hen

THE IOWA LINE *of Material Handling Equipment Includes:* ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS • HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

Mills, Blythe Bros., and Nello L. Teer companies—is doing that one."

The map and the colored pins illustrate the grim and enormous task that is going on in setting up bases around the fringe of the Iron Curtain. Men are building these bases in isolated parts of the world in rough camp surroundings where the temperature may be anywhere from 60 degrees below zero to 160 degrees above. Besides the physical discomforts of heat and cold, insects, primitive accommodations, poor food, lack of recreational facilities, and so on, there is the great loneliness of being far removed from native land, families, and friends.

The Outer World

"This working in the outer world away from the comforts of what we call civilization is not easy", said Dillon. "I've seen strong men crack up at being separated from their wives and children, and beat their heads against the sides of a bunk. In the Army they call it battle fatigue, but it's just a large case of homesickness. When I was working in Newfoundland during World War II one poor devil had to be sent back home in a strait jacket."

Dillon has had his share of strange experiences while knocking around the world. After he returned to this country from Newfoundland, he sailed for Africa to work on a base in Eritrea. He brought along clothing suitable only for a tropical climate, but then his ship was turned back from crossing the North Atlantic because of the submarine menace, and sailed instead through the Caribbean and Panama Canal, down the west coast of South America, around Cape Horn, and east across the South Atlantic to Cape Town. "We rounded the Horn in a wintry blizzard", reminisced Dillon, "and there I was wearing a straw hat.

"Despite its being called a white man's graveyard because of the great heat, which does hit 160 degrees," Dillon continued, "Eritrea was a good place to work. We had air-conditioned barracks that were cooled off to 80 degrees. This felt so cold in comparison that we wore sweaters inside to be comfortable. The food was excellent, labor-management relations were good, and the personnel turnover was negligible."

Turnover Problem

This turnover in personnel is one of the big problems in overseas construction. Men sign contracts to work at least one year, usually two years, on a foreign job, and get their transportation paid both ways if they stick. If they quit, they have to pay their own way home. If the turnover does not exceed 25 per cent, that is considered good. Turnovers up to 60 per cent and more are not uncommon.

According to Dillon, this overseas work quickly separates the men from the boys. He is a stickler for his CMA members fulfilling their contracts, but urges greater care in the selection of personnel for foreign construction in the first place. One of his criticisms is leveled at the personnel managers of some large construction firms for not taking a trip to the job site and acquainting themselves with the actual working conditions. Only in this way, he maintains, can they be realistic in their hiring. Such a trip would keep them from misrepresenting living conditions, food, lodging, entertainment, and describing a paradise that just does not exist. Dillon wants all employment contracts to contain detailed statements as to the nature of living, housing, and sanitary conditions at the project. California has such a section in its labor code, but New York, where a great amount of hiring is done, has no such ruling.

Dillon also wants to set aside the 50-year age limit just set up by contractors on foreign jobs. "Provided a man can pass the customary physical examination given to all overseas workers before they are hired," he declared, "there is no reason why a man past 50 cannot perform the work in which he is a specialist. Construction firms insist on experience, but to acquire that a man must pay for it with age. It is my experience that the older men are a better dollars-and-cents investment to the contractor than the younger men. They not only have superior skill acquired through years of experience, but they also have priceless ability to improvise in an emergency. Furthermore, since they have sown their wild oats, they invariably turn in a record of less time lost from the job through absenteeism and accidents than the young fellows.

Not Always Big Money

Some overseas work pays well, but on the majority of such projects, according to Dillon, the pay is no higher than what the men would make at the same jobs here in the States. They do get a low rate for board and room, usually $1.50 a day, at the construction camp, but if they live elsewhere they pay high, for prices go up when the Americans move in.

Yet the work has an attraction for adventurous souls who prefer the hardships of freezing cold or blazing sun to a swivel-chair job in an air-conditioned office with the possibility of ulcers, high blood pressure, or a nervous breakdown. But this pioneer work does not go well with men who have worked 10 or more years steadily at their jobs in this country, says Dillon. They are in the rockingchair-slipper-pipe-wife kind of rut, he feels, and could never get used to working away from home for an extended time.

The Roving Kind

The typical overseas constructor makes a career out of foreign work. He may be married, but he works out of the country in order to save money to provide his family with things he could not otherwise afford. Or he may be single and like to go on a spending spree at the termination of his contract, enjoy a two or three-months' vacation back in the States. Then, too, the construction stiff is assured of steady work for longer periods of time

(Concluded on next page)

in gravel pits containing 50% stone

"IT'S THE HORIZONTAL SCREEN THAT DOES THE TRICK"

OF course, the entire Junior Tandem plant is built for high capacity, but it's the Cedarapids Horizontal Screen, and the way it's used, that accounts for C. C. Linck consistently getting 20 to 25% more yards per hour from his Junior Tandems than from other plants he's used.

ONLY CEDARAPIDS PORTABLE PLANTS HAVE HORIZONTAL SCREENS!

The vibrating motion of the screen tosses the material upward and forward. As it falls, it strikes the screen cloth at right angles. A greater percentage of the material passes through each opening, because *the entire opening is utilized*. All the material that *should* pass through the screen *goes through* giving 25 to 30% more efficiency per square foot than other types.

The top deck feeding principle used on Cedarapids plants increases capacity, too, by eliminating any possible choke point and balancing the oversize pit run material between the jaw crusher and the roll crusher. By making an immediate split of the material between the proper crushers, the circulating load on crushers, belts and screens is reduced, and the output of the plant isn't limited by screen capacity or the capacity of the jaw crushers.

C. C. Linck owns two Cedarapids Junior Tandems, a Cedarapids 2236 Portable Primary and a Cedarapids Bin and Screening Unit. To put *your* operations on a big production basis like C. C. Linck, ask your Cedarapids distributor to explain all the features that keep Linck sold on Cedarapids equipment.

Cedarapids Built by IOWA

headquarters for

COST REDUCING EQUIPMENT

IOWA MANUFACTURING COMPANY • Cedar Rapids, Iowa, U.S.A.

Man Behind the Men Who Build Overseas

(Continued from preceding page)

on these big foreign projects than he might get back home. But it is mostly the roving kind with the itchy foot, Dillon claims, who makes the typical overseas worker—the man who wants "just one more foreign job before settling down".

Dillon is in constant touch with projects all over the world, either by letter from CMA members or by visits from these "Foreign Construction Legionnaires" as they drop in on the New York office between assignments. He thus learns of their problems and works to help them either in getting them placed in a job, or straightening out such matters as wages and hours, social security, income tax, or maybe a marital problem. Dillon has a reputation for talking a lot of the boys right out of their worries.

A long-distance phone call broke in on our discussion about trying to set up an impartial board to give a hearing to men fired from jobs. The call was from a construction stiff in Oklahoma who wanted advice from Dillon about taking a pipeline job in the Belgian Congo. After a quick check to see if he was a *bona fide* member of the Construction Men's Association, Dillon told him about a better-paying longer-lasting job that had opened up in Venezuela. Over the phone came the reply that the footloose worker would be on his way to South America instead of Africa, and would Dillon please call up his mother in New Jersey and give her his new address. Dillon assured him everything would be taken care of.

As he hung up the phone, the little man shifted the pipe in his mouth and smiled to himself as he watched from the window a ship leaving an East River dock. "Old construction stiffs never die", he said, paraphrasing another who had done a lot of foreign work too; "they just dry up and blow away."

C. & E. M. Photo

James Dillon shows Tom Boston and Ted Cotner, both construction superintendents and CMA members, where they can go next for work on a foreign project.

Data on Material-Handling And Processing Equipment

A 36-page catalog on material-handling and processing equipment is issued by Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill. It describes loaders, conveyors, buckets, material handling pumps, and crushing, screening and washing plants. There is a job photo for each unit, along with a description and a table of specifications.

This literature may be obtained from the company by requesting Form No. 100, or by using the Request Card at page 16. Circle No. 770.

Goodyear Promotes Buckley

Alan G. Buckley is Assistant Manager of Construction Engineering of Goodyear Tire & Rubber Co., Akron, Ohio, and will undertake engineering work for all Goodyear plants. Mr. Buckley has just returned from Luxembourg, where, since 1949, he has been in charge of engineering for Goodyear's newest plant, now producing tires for the Benelux nations. Other jobs abroad which Mr. Buckley has undertaken include assignments in Java, Brazil, and Singapore. Between these posts he returned to Akron to coordinate engineering work on a special job in Goodyear's home office.

VELVETOUCH LASTS LONGER
. . . BECAUSE IT'S ALL-METAL
Experienced operators know Velvetouch clutch plates, facings and brake linings cut costs . . . keep heavy duty earth-movers out of the repair shop . . . and on the job. That's why leading manufacturers specify Velvetouch . . . why you should insist upon Genuine Velvetouch replacement parts. They cost less in the long run! For details, contact your jobber, our nearest branch . . . or The S. K. Wellman Co., 1374 E. 51st St., Cleveland 3, Ohio.
THE S. K. WELLMAN CO. WAREHOUSING CENTERS
ATLANTA—119 14th St., N. E. Atlanta 5, Georgia
LOS ANGELES—1110 S. Hope Street, Los Angeles 15, Calif.
TORONTO, ONTARIO The S. K. Wellman Co. of Canada, Ltd., 2839 Dufferin St.
CHICAGO—1500 South Western Ave., Chicago 8, Illinois
PHILADELPHIA—1545 West Belfield Ave., Philadelphia, Pa.
EXPORT DEPARTMENT—8 So. Michigan Ave. Chicago 3, Ill., U. S. A.
CLEVELAND—1392 East 51st St., Cleveland 3, Ohio
PORTLAND—636 N. W. 16th Ave., Portland 9, Oregon
WASHINGTON OFFICE—1101 Vermont Ave. N. W. Washington 5, D. C.
DALLAS—3407 Main Street, Dallas 1, Texas
SAN FRANCISCO—424 Bryant Street, San Francisco 7, Calif.
Velvetouch

BLADES
AND CUTTING EDGES
of Superior Quality by
Shunk
For all makes and types of road building and road maintaining machines. Also —
BULLDOZER BLADES
BUCKET LIPS
PATENTED SCARIFIER and ICE and SNOW REMOVAL BLADES
MOLDBOARDS
SCARIFIER TEETH
All widths, lengths, and thicknesses; accurately punched to fit your make of machine.
Write for bulletins and other information.
Shunk
MANUFACTURING COMPANY
Established 1854
BUCYRUS, OHIO.

Roadside-maintenance and other attachments for the Little Giant tractor are many and varied—among them, a 42-inch bulldozer, ¼-ton dump trailer, 700-pound roller, 72-inch triple gang mower, scarifier, disk harrow, and 400-pound spreader.

Riding-Type Tractor For Maintenance Work

A riding-type tractor with a wide range of attachments for roadside maintenance is manufactured by Beaver Tractor Co., Inc., 1495 Stratford Ave., Stratford, Conn. Powered by a 6-hp Wisconsin air-cooled engine, The Little Giant has 3-stage gear reduction and will travel from 1½ to 4 mph. The body is 8 feet long and 38 inches wide.

Attachments include a 42-inch bulldozer blade for light backfilling and stripping, a ¼-ton dump trailer, and a 700-pound roller. In addition, a 72-inch triple gang mower, a 38-inch side-type mower, a scarifier, a disk harrow, and a 400-pound spreader are available for roadside landscaping.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 710.

Plastic Safety Lenses

Plastic safety lenses are announced by American Optical Co., Southbridge, Mass. Said to be highly resistant to chemicals, welding spatter, sparks, and impact, they are made by combining certain chemicals with a thermosetting liquid plastic which solidifies under heat. The company claims that in tests the lenses survived the impact of a 9-ounce steel ball dropped from a height of nearly 4 feet.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 716.

New Water Repellent

A masonry water-repellent is announced by The Lockrey Co., Southampton, N. Y. Silicon in masonry attracts the silicones in Siliconiz, creating a coating in the pores which is said to keep out water and still permit the passage of air and water vapor. The company points out that this chemical relationship between the masonry and the repellent assures lasting effectiveness. Siliconiz is swabbed or sprayed on with a hose, and dries in several minutes.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 705.

After a half-hour flow of water from a faucet under 40-pound pressure, the upper half of this concrete block is still bone-dry, as a result of one treatment of Siliconiz.

Line of Vertical Pumps

An 8-page bulletin describing a line of vertical pumps is available from Lawrence Machine & Pump Corp., 371 Market St., Lawrence, Mass. It illustrates sump-type pumps for inside mounting and propeller type for irrigation and drainage.

The sump-type pump requires no priming or packing. Steady bearings are used at intervals of 5 to 6 feet. When the liquid is suitable, a small quantity is diverted from the discharge pipe to serve as a lubricant.

The propeller or screw-type pump is designed for large-capacity low-head pumping. The propeller is driven by an engine through a ¼-turn belt drive.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 729.

HERE'S A FASTER, EASIER, CHEAPER WAY TO HANDLE MORE DIRT, ROCK OR GRAVEL!

OMAHA STANDARD TRAILERS

The OMAHA STANDARD "CENTER DUMP" Trailer . . .

. . . Custom Built to Job Requirements is designed for contractors who want to haul dirt, gravel, rock, long or short distances, quickly and at low cost, for stock piling, spreading or dumping. Contractors say it is just what they have been looking for!

★ Each unit built to job requirements.
★ Available in sizes and lengths to meet all bridge and axle laws.
★ All *steel welded* body, chassis. Built to withstand roughest loading, toughest service.
★ Dumping mechanism FOOL-proof—trouble-FREE!
★ Release on doors INSTANT, SHOCK-PROOF, protected from material flow.
★ DOOR OPENING Meter control that can be *pre-set*.

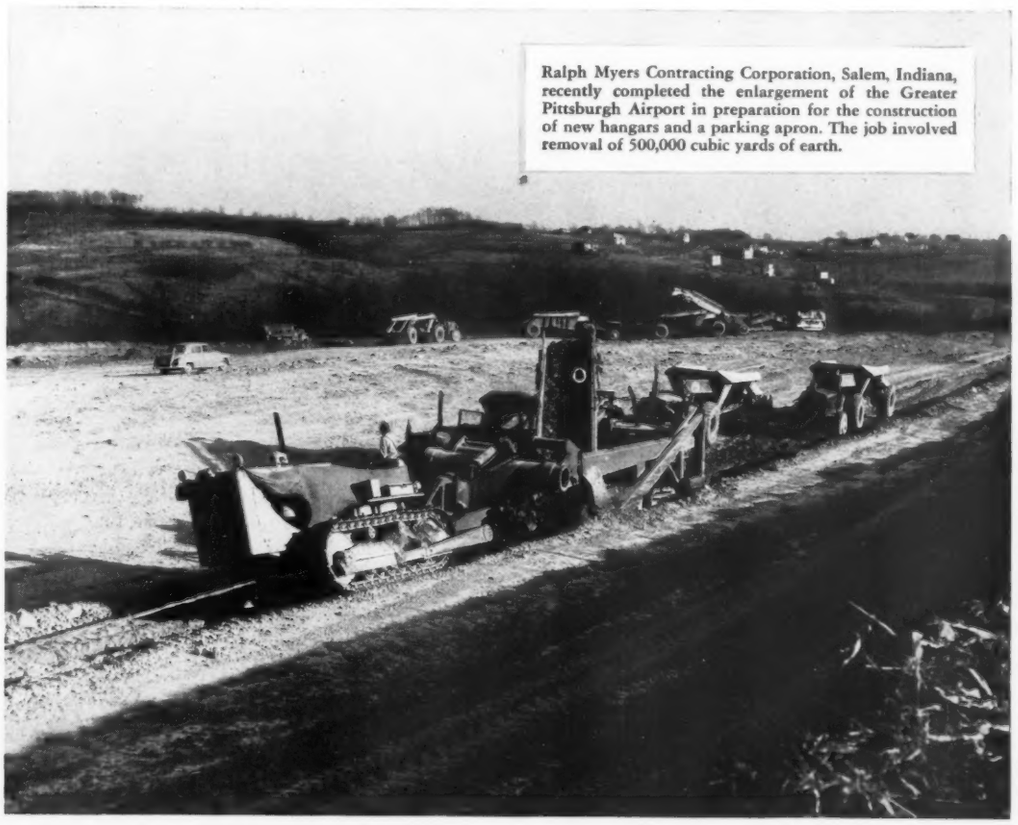
Write at once for specifications and descriptive folder that will answer your questions and show how you can make every load a "profit" load. Address today—

OMAHA STANDARD FACTORY & GENERAL OFFICES 2411 West Broadway Council Bluffs, Iowa

GULF PRODUCTS and FINE SERVICE

keep equipment rolling

on Pittsburgh Airport Project



Ralph Myers Contracting Corporation, Salem, Indiana, recently completed the enlargement of the Greater Pittsburgh Airport in preparation for the construction of new hangars and a parking apron. The job involved removal of 500,000 cubic yards of earth.

ANOTHER important earth-moving project where Gulf lubricants and fuels worked as a team to keep the job rolling smoothly—and on schedule.

Here are a few of the reasons why leading contractors like Ralph Myers Contracting Corporation prefer the products identified by the familiar Orange Disc: Gulf lubricants provide an extra margin of protection . . . Gulf fuels help to insure full power . . . Gulf supplies expert engineering counsel and prompt delivery service . . . Result: fewer delays, lower maintenance costs, bigger profits!

Let us discuss with you how our products and services can help you on your next job. They are available to you through more than 1300 warehouses. Write, wire, or phone today. Gulf Oil Corporation · Gulf Refining Company, Pittsburgh 30, Pennsylvania.

GULF

Flood-Control Levee For City Protection

Final Section in Army Engineers' 8½-Mile Project Is Under Construction at Louisville, Ky.

• IN January, flood protection for the city of Louisville was complete, except for the construction of 7 pump plants, and Kentucky's largest city is partially protected from floods like those that ravaged it in 1913 and again in 1937. The U. S. Army Corps of Engineers, Louisville District, conceived the whole protection plan—of which this is the last and largest of five sections—and it was put under construction after the close of World War II.

The protection consists of a combination of concrete walls and earth levees, the walls being built in areas where a wide enough right-of-way was not available for the larger cross section of the levee. Walls are principally located along the waterfront in the older downtown business district of Louisville. Sections are lettered from A to E beginning at the upstream end of the city. At both the upper and lower ends the protection ties back to high ground, presenting a complete barrier to any rises from the Ohio river.

Section E, the final link in the Ohio River Basin Program for Louisville, is 46,815 feet long. A few gaps occur in the levee where the ground is high enough to render an embankment unnecessary, but the levee length is still slightly better than 8½ miles. The District Army Engineer at Louisville awarded a contract for the construction of Section E to Terry & Steadman, Inc., of Bay City, Mich., on its low bid of $1,538,547. Work got under way in June, 1950, and continued until inclement weather in the late fall forced a shutdown of activity for the winter. Construction was resumed in May, 1951, and was scheduled for completion in January.

For the past five years, Kentucky, in the vicinity of Louisville, has seen more of Terry & Steadman, Inc., than have the home headquarters in Michigan. In 1947 the Corps of Engineers awarded the firm a contract for the levee and drainage work on Section C. The same contractor was subsequently the successful low bidder on Section D, including both wall and levee construction. The company also jumped across the river for some levee work at New Albany, Ind., on the right bank of the Ohio opposite Louisville. Recent developments in the firm will change its name for future work. L. H. Terry is now with Terry & Wright Co., currently engaged on a $1,470,588 concrete-wall and earth-levee contract at New Albany, Ind. His place with the original company is taken by O. L. Jones, its general superintendent.

New Levee

Section E begins in the vicinity of Algonquin Parkway and the Louisville city limits, and roughly parallels the river downstream into Jefferson County, to a point just above Cane Run Ditch. There the levee turns inland, continuing until high ground is reached at U.S. 31-W, the Dixie Highway. The height of the levee varies from a minimum of 2 feet, where the ground elevation is high, to a maximum of 64 feet. At the highest part the embankment has a minimum width through the base of 450 feet; in the low sections the base width is as narrow as 24 feet.

Elevation of the levee top on Section E ranges from 461.1 mean sea level at the upper end to 459.6 at the lower end. In the great flood of 1937, the river reached a record height of 460.15 MSL at a gage located at dam No. 41, 5 miles upstream from Section E. The new embankment has a crown width of 12 feet with 3 to 1 slopes on both river and land sides. On the river side, where the slope is exposed to river current, a 12-inch layer of riprap is placed on a 6-inch gravel blanket up to a point 15 feet below the top of the levee. This will prevent the slope from scouring and eroding. From the toe of slope on the river side, a berm extends outward for a width of at least 40 feet.

Dirt Is Scarce

The Corps of Engineers' estimate called for 1,456,000 cubic yards of embankment to make up the levee. Excavation items included 1,404,000 yards of borrow and 293,500 yards of channel excavation. Borrow came from eight

(Continued on next page)

C. & E. M. Photo

A Euclid loader fills a bottom-dump "Euc" with dirt excavated from a riverside diversion ditch on the Louisville job. Help from a D7 is welcome in the heavy clay.

Highway base, secondary road or black top drives—Lay them at less cost

JAEGER Paver-Type
AGGREGATE SPREADER
costs ½ the price of bituminous pavers, accurately lays both base and surface aggregates, free-flowing hot or cold mixtures and plant-mixed stabilized soils — up to 12" thickness in widths to 11', lesser thicknesses to 12½' width.
CULTER'S SELF SERVE DRUGS

Designed to meet the need of both large and small contractors and highway departments, this low cost spreader lays many types of materials, in a wider range of widths and thicknesses, with the accuracy required for highway, street and airport base and both the base and top of secondary roads, parking lots and drives. Crawler or 4-wheel traction is on subgrade to avoid displacing loose material. Straightedge runners control level of strike-off. Blends joints; can lay flush to curbs, headers. Two models, to work with all size trucks.

For details, see your Jaeger distributor or send for Catalog SPS-1.

THE JAEGER MACHINE COMPANY

701 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • PUMPS • MIXERS • HOISTS • PAVING MACHINERY

"BIG OR SMALL, THEY'RE USED BY ALL"

OVERMAN'S STONE AND BITUMINOUS SPREADER

is saving time and money for contractors and highway departments the country over. From large to small, they are all proving the economical operation of our spreaders.

Typical owners include—

- STATE HIGHWAY DEPARTMENTS OF OHIO, LOUISIANA, NORTH DAKOTA, VIRGINIA
- STREET DEPARTMENTS LARGE CITIES (as Philadelphia, Pa.) SMALL CITIES (as Huntington, Indiana.)
- COUNTY HIGHWAY DEPARTMENTS
- LARGE CONTRACTORS (Operating up to 4 hot mix plants.)
- SMALL CONTRACTORS (Doing driveway work.)

WRITE FOR DESCRIPTIVE BULLETIN

I. J. Overman Mfg. Co.

BOX 203 MARION, INDIANA

different pits on both river and land sides of the levee. The channel excavation was required for the diversion of Big Run Ditch, a fairly large stream that crossed and recrossed the levee alignment in its lower reaches. The creek was relocated to a course along the river side of the levee, and the excavation for its new channel helped to provide some of the material for the levee. In places this channel has a depth of 25 feet.

The contract also included provisions to drain the area behind the levee, since the earth wall cuts off natural drainage to the river. The essential features of this drainage system are 23 sluice gates, ranging from 6 inches in diameter all the way up to 17 feet x 24 feet 5½ inches. The latter is at the end of the Southern Outfall sewer, one of the largest of its kind in the country, which gave financial headaches to the contractors engaged in its construction several years ago.

Sluice gates are installed in reinforced-concrete structures, built inside the line of the levee, and some are electrically operated. In constructing the housing for the sluice gate at the Southern Outfall, the flow of the latter was channeled through a diversion ditch around to one side. The big outfall, semi-elliptical in section, as a 29-foot outside diameter; at the bottom its concrete walls are 4 feet thick. The gate well structure at this outfall is nearly 80 feet high.

Excavating and Dirt-Moving

The contractor had 7 cranes on the job—3 Northwests, 3 Lorains, and a Bay City—from ¾ to 1½-yard machines. They were used for structure excavation, drainage work, and with dragline buckets to load hauling equipment. In addition there was a Thew-Lorain 2-yard shovel and a Northwest ¾-yard Pullshovel for general excavation and drainage work. A fleet of 30 Ford trucks worked with these units; 8 of the trucks held 7 yards, while the remaining 22 carried 4 yards.

On the long hauls, which reached a maximum of 2.1 miles, the bulk of the dirt was handled by a Euclid loader and 16 bottom-dump Euclids hauling an average of 16 yards per load. The loader operated at a clip of 24 yards per minute as it was drawn along by an Allis-Chalmers HD-19 tractor, with a Caterpillar D7 pushing in the rear to help out when the going got bad in the heavy clay.

For shorter hauls up to 1,000 feet, tractor-scraper units were employed. They included 3 LeTourneau 18-yard LP Carryalls pulled by D8 tractors, and 4 LaPlant-Choate 24-yard scrapers hooked with 2 D8's and 2 HD-19 tractors. A dozen other tractors were on hand to serve as pushers in loading, dozing work, or towing rollers. They included 5 D8's, 3 D7's, 2 DH-19's, and 2 HD-7's. Material was placed in 8-inch lifts which were compacted to 95 per cent maximum density at optimum moisture. Compaction was obtained with 8 tamping rollers—4 Tampo, 2 Blaw-Knox, and 2 LeTourneau, hooked up in pairs.

Three water-tank trucks, holding 2,500, 2,000, and 1,000 gallons respectively, wet the lifts when necessary from gravity spraybars at the rear. The water was either taken from city hydrants or pumped from sump holes along the levee. Final shaping of the embankments was handled by 7 motor graders—4 Allis-Chalmers AD-4's, and 3 Caterpillar No. 12's. A portion of the dirt-moving was subbed out to the Highland Construction Co. of Louisville whose equipment is included in the above listing.

Work Two Shifts

Dirt-moving was on a two-shift basis of 10 hours each. The first shift began at 5:30 a.m. and ended at 4:00 p.m. with a half hour off for lunch; the second shift ran from 4:30 p.m. to 2:30 a.m. the next day, with the half-hour lunch period included in the working time. In an ordinary round-the-clock operating day the contractor averaged from 25,000 to 28,000 yards of dirt. Yardage figures would have been larger if it were not for the many moves required of the equipment because of the sewer work cutting up the levee. Until these drainage gaps were closed there was considerable jumping about.

Light for the after-dark work was provided by six Onan 10-kw light plants mounted on rubber-tired carriages. Each plant supplied current for ten 1,000-watt bulbs. Two of the bulbs were mounted on the plant, while the others were paired off on stands built

(Concluded on next page)

Here a grease monkey lubricates a fitting high up on the loader's conveyor. He uses gun and hose from a Ford-truck-mounted Alemite greasing unit.

LaPLANT-CHOATE MOTOR SCRAPERS

"Can't be beat for guts and roaring get-away"

WHEN you want the dope on scraper performance . . . the kind that gets the job done in schedule-trimming time . . . ask the operators. They're the boys who know to the last ounce what you can get out of a machine . . . and what you *should* get. They know an easy-operating, high-producing rig when they see one. That's why so many operators agree with Motor Scraper owners when it comes right down to choosing a scraper on the basis of performance, trouble-free operation and big production. Get the complete story from your LaPlant-Choate distributor.

Says: BILL CLEMENS of Northboro, Mass., TS 300 operator for BAYER & MINGOLLA Construction Company of Worcester, Mass.

BILL ADDS, "What we need on this job is a dozer for each machine because I make my haul, spread my load and am back waiting on the dozer every trip."

OPERATORS LIKE THESE LaPLANT-CHOATE FEATURES . . .

Positive, double-acting hydraulic steering for easy, effortless operation.
Big 4-wheel air brakes—22" x 7", for absolute safety at maximum operating speeds.
280 HP or 275 HP (your choice of either Buda or Cummins engines) for slugging power when it's needed.
Big tires—24:00 x 29, with plenty of traction and flotation.
High speeds—over 22 mph that cut valuable seconds off cycle time.
Big capacity—14-cu. yds. struck and 18-cu. yds. heaped means more dirt hauled in fewer trips.

Here's Another Operator's Viewpoint

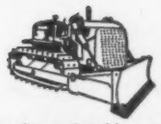
Donald A. LaVigne of Worcester, Mass. says, "I've run every kind of scraper made and I'll take LaPlant-Choate any day. They're not only fast, they're safe. Another thing about them, I don't feel all beat up after running one all day. No more tiring than driving my car."

Don operates one of Bayer & Mingolla's fleet of six TS 300 Motor Scrapers.

LaPLANT-CHOATE MANUFACTURING CO., INC. CEDAR RAPIDS, IOWA, U. S. A.

Cable-operated Scrapers in 6-, 8- and 14-yd. sizes for all makes of track-type tractors.

2- and 4-yd. Scrapers for track-type and rubber-tired industrial tractors.



Hydraulic and Cable-operated Dozers.

Flood-Control Levee For City Protection

(Continued from preceding page)

on sleds that were easily shifted about the levee. These lights were strung out where the fill was being placed. At the borrow pits the loader was outfitted with floodlights, and added illumination was supplied from the headlights on the hauling equipment.

Every unit was greased each shift, except the trucks, which were serviced on a mileage basis. The lubrication was done out on the job by four Ford trucks mounting Alemite greasing equipment. Gulf products also supplied fuel for the machines. At the contractor's yard and shop near the upper end of the project diesel fuel was stored in an 8,000-gallon tank and gasoline in a 3,000-gallon tank. These were distributed over the job in smaller trucks carrying 800-gallon tanks for the diesel fuel and 500-gallon tanks for the gas.

The main shop, a sheet-metal building, housed an air compressor, forge, welding machine, and an adequate line of bench tools. Another smaller yard, at the lower end of the levee, was used for storage and repairs of a minor nature.

A subcontract was given to the Fox Nursery Store of Cincinnati, Ohio, for fertilizing, seeding, and mulching 120 acres on the crest and slopes of the levee.

Quantities and Personnel

Major items in the Louisville flood-protection contract included:

Embankment	1,456,000 cu. yds.
Channel excavation	293,500 cu. yds.
Borrow excavation	1,404,000 cu. yds.
Stripping	280,000 cu. yds.
Gravel blanket	12,000 cu. yds.
Riprap	3,000 cu. yds.
Concrete	3,730 cu. yds.

Terry & Steadman, Inc., had 300 men employed on the project at the peak of operations under the direction of O. L. Jones, General Superintendent, and Earl Steadman, Office Manager.

For the U. S. Corps of Engineers, John H. Krema was Resident Engineer, and I. C. Uland was Project Engineer. The Louisville Engineer District is headed by Lt. Col. Clarence Bidgood. Lt. Col. H. C. Schrader is Executive Officer and Capt. W. M. Wilson is Assistant Executive Officer for the District.

White-House Timber Stands 133-Year Test

When the White House was built, elevators, electric wiring, central heating, and plumbing were no part of its interior design. During the 133 years of its existence, however, modern living has caught up with it, and over the years the building has been subjected to a good many structural alterations. The current restoration, now nearly completed, has focused attention on the President's home, and the National Lumber Manufacturers Association has released some interesting facts about the condition of the structural timbers found by the engineers who are doing the renovation work.

The various modernizations and additions that took place during the 133 years caused the foundations to settle unevenly under excessive loads and the wood to suffer almost impossibly severe tests. An example is that of the state dining room, which was revamped in 1902, necessitating the cutting down of 18-inch beams to 5 inches. Forty-five years later the beams, though split, still held. "How any timber could stand up 45 years under such treatment", said W. E. Reynolds, U. S. Commissioner of Public Buildings, "is hard to imagine—force of habit, perhaps." There was no indication of decay in any of the timbers, nor was a single termite found. One construction expert gave it as his opinion that the way the timber in the White House stood up under abuse was "beyond belief".

"West Clinton Addition, Block 2, Lot Number 18—and ask for Blondie."

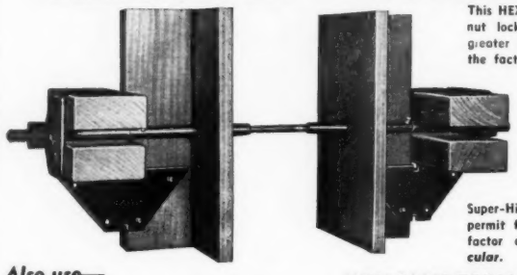
Wrought-Iron Booklet

"Proof by Performance" is the title of an illustrated 8-page booklet released by A. M. Byers Co., Clark Bldg., Pittsburgh 22, Pa. It describes, in a nontechnical manner, a number of installations in which wrought iron gave outstanding service over long periods of time. A list of other Byers publications is included.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 727.

New FORM TIE development

HEX-LOCK—SINGLE-UNIT



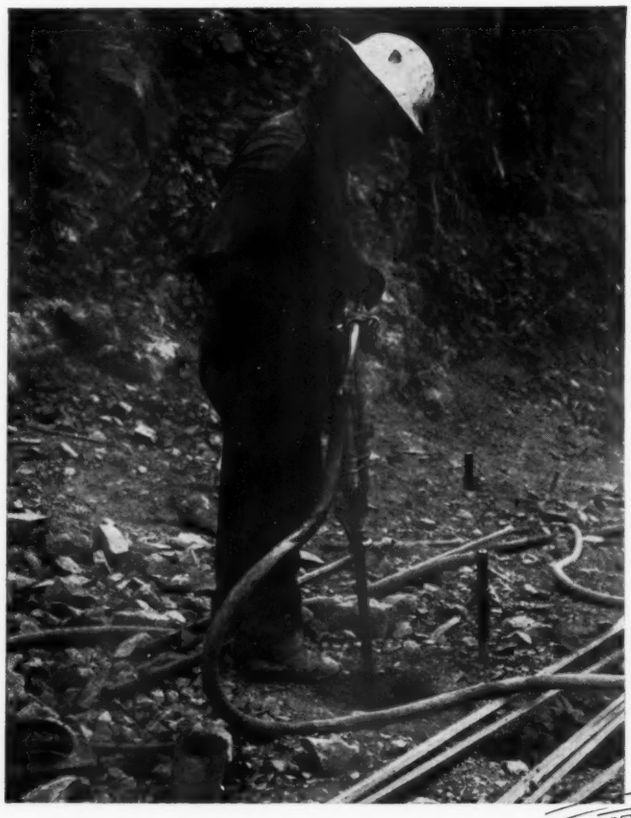
This HEXLOCK Clamp has a floating nut locked in place. This permits greater ease of operation, due to the fact that you are turning nuts on metal instead of metal on wood. This Clamp can also be used directly with our Vibro-Lock Clamp in cases where walls may have a slight batter on one side only. All our clamps employ Super-Hi Tensile Inner Rods, which permit faster pouring with a known factor of safety. *Write for Circular.*

Also use—

Williams Super-Hi Tensile Tie Rods, Couplings, Pig-Tail Anchors, Form Aligners, Corner Clamps, Waler Supports, and Assembly Motor Units.

WILLIAMS FORM ENGINEERING CORPORATION

1501 Madison Ave., S.E., Grand Rapids 7, Mich.



2 Big Extra Values for you!

...in JOY SILVER STREAK ROCK DRILLS

(1) EXCLUSIVE! CADMIUM PLATING INSIDE and OUT

Cadmium plating prevents rusting of JOY Silver Streak Rock Drills and spare parts while in use or in storage. In addition, the plating forms cadmium oxide under frictional heat and pressure. This so effectively acts as a lubricant that the inner parts will not score, *even if regular lubrication is temporarily neglected!* In addition to assuring a smooth "run-in," cadmium plating allows closer tolerance of precision fitting parts—vital factors in the power and long life of the drill.

(2) EXCLUSIVE! JOY DUAL VALVE "Makes Air Do More Work"

The fast, powerful JOY Dual Valve action results in more and harder-hitting piston strokes per minute, for faster drilling with less air. The right amount of air is admitted behind the piston on the power stroke, and air is excluded ahead of the piston, to exert maximum force on the drill steel. Then the Dual Valve meters just enough air ahead of the piston to return it with a fast, snappy action for the next blow. The air actually does more work!

WAD C 4026

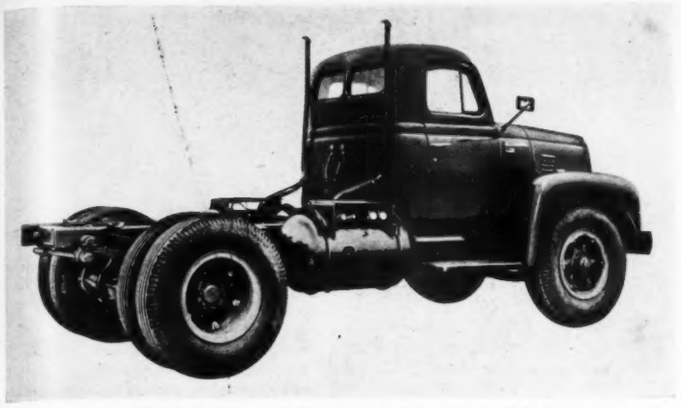
Over 100 Years of Engineering Leadership

Consult a Joy Engineer

JOY MANUFACTURING COMPANY

GENERAL OFFICES: HENRY W. OLIVER BUILDING · PITTSBURGH 22, PA.

IN CANADA: JOY MANUFACTURING COMPANY (CANADA) LIMITED, GALT, ONTARIO



Propane-butane-fueled engines are now optional equipment on all International truck models equipped with International Super Red Diamond engines. Large tanks permit operation up to 400 miles between refueling. This is the LP-gas-fueled Model L-205.

Truck Line Offers Gaseous-Fuel Engine

The motor truck division of International Harvester has introduced factory-built engines powered by liquefied petroleum gas as optional on all International trucks equipped with heavy-duty Super Red Diamond engines. The new LP-gas (propane-butane) engines are listed by Underwriters Laboratories.

Combustion of LP-gas, the company points out, forms no carbon sludge or gummy deposits. It is said to eliminate oil dilution and wash-down of lubricating film. In addition, its high-octane qualities permit use of higher compression ratios.

The manifold arrangement in the new engines has been changed to a cold induction system free from the hot spots necessary for gasoline engines. This change was made by completely divorcing the intake and exhaust manifolds, eliminating the connection between the manifolds as it exists in the standard engine.

Regular gasoline tanks have been replaced by heavy-steel dual tanks of 62-gallon liquid measure that are also Underwriters-listed. The fuel in liquid form is pumped through a hose fitting attached to the fill valve on the pressure tank. Safety features include vertical venting pipes, seal caps and automatic excess-flow shut-off valves, and high-pressure lines and fittings.

The company points out that LP-gas costs several cents less than gasoline in most states. It adds that potential production of this gas is large.

Further information on these trucks may be secured from the company at 180 N. Michigan Ave., Chicago 1, Ill. Or use the Request Card at page 16. Circle No. 750.

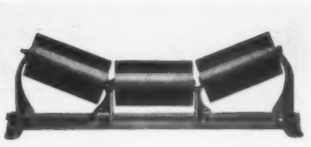
New Elasticized Tip Pilots Stud in Powder-Type Tools

A bulletin describing an improved fastener for powder-actuated tools is announced by Ramset Fasteners, Inc., 12117 Berea Road, Cleveland 11, Ohio. The Tru-Set fastener has an elasticized red tip, slightly larger than the barrel, which holds and pilots the fastener in the barrel.

The company claims that the new tip virtually eliminates the need for manual straightening. Previously, fasteners were held in the breech of Ramset tools by a thin flange which was sheared off when gas pressure developed to a maximum. Now the flangeless fasteners are inserted in the breech plug under the powder load.

New-model tools, the company also points out, provide greater penetration, automatic cleaning, and more control; 20 seconds is now required for a complete operating cycle of a Ramset fastening tool.

This literature may be obtained from the company, or by using the Request Card bound in at page 16. Circle No. 801.



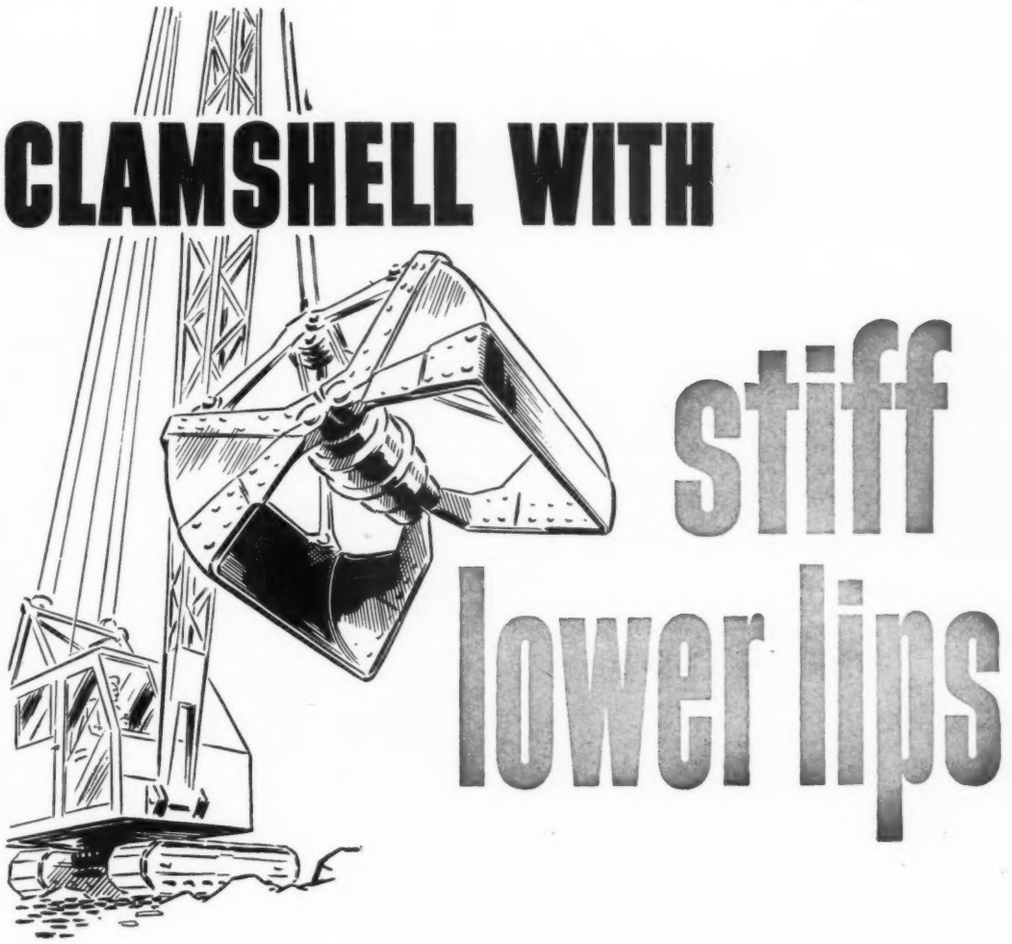
Flexible automotive-type grease tubing has replaced rigid tubing in Rex roller-bearing belt-conveyor idlers. It will take higher gun pressures and will not break off in shipment.

New Greasing System For Conveyor Idlers

An improvement in the greasing system of its belt-conveyor idlers is announced by Chain Belt Co., 1666 W. Bruce St., Milwaukee 4, Wis. Rigid-steel grease piping has been replaced by reinforced flexible automotive-type grease tubing, which will take higher gun pressures and will not break off in shipment, the manufacturer says.

The flexible sections are made in lengths which allow them to "hug" the inside of the inverted angle or channel base. Grease-tube extension to the far side is accomplished by threading a flexible section through the base to the grease fitting at the near side. The location of the grease fittings is said to permit safe servicing and protect them during shipment.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 720.



Rock-picking packs a tough wallop for a pair of bucket lips. Whether the load is sludge or tight-grained granite, abrasion alone is enough to wear thin the toughest steel . . .

. . . But — when you throw in the almost continuous impact when the clam is in the hands of a high-grade operator — bucket lips are sure to curl back and quit . . .

. . . Unless you have taken the precaution to protect the life of your buckets — up to twice as long as the unprotected type — with one of the many Airco Hardfacing Alloys available to extend the life of all your equipment.

'Face' it. There are more than twenty Airco Hardfacing Alloys for you to choose from. Any Airco representative will be glad to give you complete information. Contact your nearest Airco Office today.

AT THE FRONTIERS OF PROGRESS YOU'LL FIND AN AIR REDUCTION PRODUCT

AIRCO®

DEALERS AND OFFICES IN PRINCIPAL CITIES

AIR REDUCTION

AIR REDUCTION SALES COMPANY • AIR REDUCTION MAGNOLIA COMPANY • AIR REDUCTION PACIFIC COMPANY

REPRESENTED INTERNATIONALLY BY AIRCO COMPANY INTERNATIONAL

DIVISIONS OF AIR REDUCTION COMPANY, INCORPORATED

Biggest feature of drainage work at the Brunswick Navel Air Station was this 3-barrel concrete-pipe culvert 2,200 feet long to carry Mare Brook under the new runway.

This CMC sidehill plant batched concrete for the culvert slab and cradle.

Dumpcretes carried the mix to the site and unloaded to buckets handled by crane.

Naval Air Station Enlarged

Stone for the macadam base under the bituminous-concrete runway pavement came from the quarry in Linn Halftracks to the hopper of this Diamond 24 x 36 primary crusher.

From the Diamond 12 x 36 secondary crusher at right, the stone moved along a 40-foot conveyor to a Pioneer screening plant beneath which were storage bins.

Still more plants—this one the Cedarapids 1-ton pugmill asphalt plant which turned out plant-mix paving for the airport expansion. Aggregate for the mix was processed in the Pioneer 46-VE diesel-electric portable crushing and screening plant shown below.

New 8,000-Foot Runway, Taxiway at Brunswick, Maine, for Jets; End Sections Cement Concrete; Center Bituminous Concrete

By WILLIAM H. QUIRK

Eastern Editor

• CHIEF feature of the expansion program at the U. S. Naval Air Station, Brunswick, Maine, was the construction of a new 8,000-foot runway for use by jet fighter planes. The central 7,000-foot portion of the runway is paved with bituminous concrete, while the 500-foot sections at the ends are of cement-concrete construction. Also included in the improvement was a paralleling taxiway, 8,000 feet long, and aircraft parking areas.

This work was done for the Navy by W. H. Hinman, Inc., of North Anson Maine, under a $3,336,000 contract, with additional items totaling some $575,000. The job was started July 1, 1951, and was scheduled for completion by the end of the year; but cold weather and the steel shortage extended the 6-month contract time into the early part of 1952. Since C&E Monthly visited this job, Hinman has been awarded a contract for the second runway for $2,744,000.

The Naval Air Station lies a few miles east of Brunswick, a coastal city on the Androscoggin River. Until the WPA built an airport there during the depression years, the site was known for good berry picking and for little else. U. S. 1 and the tracks of the Maine Central Railroad skirt the northern edge of the field, which is served by a spur of the M. C. During World War II the Navy took over the field, and proceeded to develop and modernize it.

Long Runway

After this preliminary program the field boasted of three runways—an east-west 6,000-footer and two at 4,500 feet to round out a conventional triangular pattern. All three original runways are paved with bituminous concrete. At the east side of the field are several hangars and an apron area, the latter paved with bituminous concrete on a soil-cement base. Mare Brook, a sizable stream, cuts diagonally across the southern end of the site, just beyond the existing runways.

At first the Navy planned to lengthen a 4,500-foot runway at the southern end, since the highway and railroad at the northern end of the field eliminated any expansion in that direction. A ledge formation athwart the proposed line, however, forced a change in plans, since the heavy rock excavation would be both costly and slow. Nevertheless the rock did serve a useful purpose later as a source of supply of crushed stone for the macadam base course.

A separate line altogether was chosen for the new runway, designated I-19. The 8,000-foot strip runs nearly north-south, and necessitated the abandonment of the two 4,500-foot runways. However, the 6,000-foot east-west runway, which crosses the new runway at its northern end, remains in service for use by propeller-type planes. Because of the high speeds in landing and takeoff with jets, the direction of the prevailing wind is not too important when determining the compass direction of the runway. The second long runway is being built parallel to this new 8,000-foot strip.

Runway Design

Runway pavement is 8,000 feet long x 200 feet wide. Beyond the pavement at each end, the area is cleared and graded for another 1,000 feet. These pads or clear zones are 1,500 feet wide. The 7,000-foot central portion of the runway consists of 11 inches of gravel subbase, topped by 6 inches of dry-bound macadam base and 3 inches of bituminous concrete. For the 500-foot end sections there is a gravel subbase

(Continued on next page)

C. & E. M. and U. S. Navy Photos

C. & E. M. Photos

To dig up old soil-cement base around the hangars, Hinman used this Bucyrus-Erie rock rake on a TD-18 tractor. Then a Northwest 1½-yard shovel, right, loaded the rubble into a fleet of Koehring 6-yard Dumptors which hauled it away.

9 inches thick supporting a 10-inch cement-concrete pavement. Of this 500-foot length, the central 200 feet is of plain concrete while the 150-foot section at each end is of reinforced concrete.

From the center line of the runway the pavement slopes at the rate of 1.5 per cent to each edge. The same rate of slope is continued out over the 150-foot shoulders that flank the pavement on each side. Shoulder construction consists of 9 inches of selected material, with the top 3 inches stabilized with asphalt.

Five hundred feet east of the runway is the new paralleling taxiway also 8,000 feet long. Its 75-foot pavement is flanked by 25-foot shoulders. Pavement design is similar to that of the runway, with the central portion bituminous, and the end sections cement concrete—reinforced and plain. The ends of the runway and taxiway are connected by a cement-concrete pavement, 362½ feet long x 150 feet wide. This strip is reinforced with wire mesh as are the 150-foot sections at the ends of the runway and taxiway. This reinforced pavement thus offers a holding area, 637½ feet x 150 feet, on which the planes may warm up before the takeoffs.

New Apron

Besides the long taxiway, other taxiways were laid out as connections between the runway and main taxiway. The taxiways, of course, trace back to the apron areas around the hangars. The original aprons were constructed with a 10-inch soil-cement stabilized base, topped by 1½ inches of bituminous concrete. Maine winters, with a frost depth 4 feet in this location, succeeded in breaking up the apron pavement, so it was removed and replaced with a 10-inch plain-concrete pavement on a 9-inch gravel subbase. The aprons, or aircraft parking areas, are divided into several sections totaling approximately 128,000 square yards.

In addition to these various paving items, the contract included the usual clearing, grading, and drainage work. Biggest feature of the drainage was a three-barrel concrete-pipe culvert, 2,200 feet long, to carry Mare Brook under the runway on a 45-degree angle. The two outer barrels are 66 inches in diameter, while the center pipe is 72 inches. (It might be mentioned that the Navy supplied this pipe at a cost of $219,000.) The barrels were laid on a reinforced-concrete slab, 24 feet 2 inches wide x 18 inches thick. A concrete cradle was then poured around the sides of the pipe to a height of 3 feet 9 inches above the foundation slab.

A lighting system for runway and taxiways was also part of the contract. During all the construction operations, the contractor maintained and kept clear a minimum 3,000-foot strip of the east-west runway for flight operations at the field. Hinman set up field headquarters, office, shop, and yard at the southwest corner of the base, and used a side gate at that location for equipment and delivery of material. Thus the work did not interfere with the Navy's routine, and the main gate at the north end of the field was kept free of trucks and construction machinery.

Triple-Barrel Culvert

Concrete for the slab and cradle supporting the 2,200-foot culvert was

(Continued on next page)

Traffic rolls smoothly

on the San Francisco—Oakland Bay Bridge

FLEXCELL* JOINT FILLER keeps joints smooth, tight, maintenance-free!

San Francisco—Oakland Bay Bridge
San Francisco, California

ONE WAY TO BE SURE of tight, smooth, neat joints wherever concrete meets concrete is to specify Flexcell Bituminous Fibre Expansion Joint Filler. It's resilient, non-extruding, remarkably durable!

MILLIONS OF TINY air cells in the cane fibre base of Flexcell permit it to absorb pressure from expanding concrete without extruding—spring back to keep the joint closed when concrete contracts. This prevents bulges and bumps, does away with gaping crevices.

LOW IN FIRST COST, Flexcell Joint Filler is easy to handle, easy to work with. Gives neat, finished joints without trimming. Protected by the patented Ferox® Process from dry rot and termite attack. Impregnated with asphalt to resist moisture. Withstands severest service and climatic conditions—saves on maintenance year after year!

THESE ARE THE REASONS why Flexcell Joint Filler has long been specified by leading engineers, contractors and architects, as well as the U. S. Army, Navy and many other Federal, State and Municipal agencies.

SO BEFORE YOU BEGIN another job, investigate the advantages and economies of using Flexcell Joint Filler—for pavements, runways, sidewalks, curbs, gutters, driveways, concrete floors. You'll be glad you did! Mail coupon today for full data.

Another CELOTEX *Product*

FLEXCELL

REG. U. S. PAT. OFF.

BITUMINOUS FIBRE EXPANSION JOINT FILLER

The Celotex Corporation, 120 S. LaSalle Street, Chicago 3, Illinois

*Flexcell is a Trademark Identifying Bituminous Fibre Expansion Joint Filler marketed by The Celotex Corporation.

MAIL COUPON TODAY

The Celotex Corporation, Dept. CEM-42
120 S. LaSalle St., Chicago 3, Ill.

Without obligation, please send me complete specifications and prices on Flexcell Bituminous Fibre Expansion Joint Filler.

Name_____

Address_____

City_____ Zone____ State_____

U. S. Naval Air Station Has Expansion Program

(Continued from preceding page)

batched and mixed at a central plant set up at a sidehill location. The plant consisted of a CMC batcher discharging into a Koehring Batchmeter on a trolley rail that fed the materials to a pair of Kwik-Mix Dandie 3-bag concrete mixers. Aggregate from Hinman's commercial plant at Westport, Maine, was stockpiled behind the plant. A crane with clamshell kept the batcher bins charged. Dragon air-entrained bag cement was supplied by the Lawrence Portland Cement Co. at Thomaston, Maine. Bancroft & Martin Rolling Mills of Portland, Maine, furnished all the reinforcing steel for the project. The culvert slab alone accounted for 230 tons.

The line of the new culvert roughly parallels the winding course of Mare Brook. In excavating for the foundation slab, the contractor removed a layer of soft blue clay as much as 4 feet deep, or down to where a stratum of hard blue clay was encountered. The trench was then leveled off with a granular backfill 2 to 4 feet thick. Wooden forms for the slab were built on top of this foundation course and divided off into panels 30 feet 6 inches long.

C. & E. M. Photo

In the borrow pit, a Euclid loader pulled by an Allis-Chalmers HD-20 tractor loads an Athey side-dump wagon pulled by a Caterpillar DW10.

The two mixers from their sidehill setup discharged the concrete directly into a fleet of five 2-yard Dumpcretes that carried the mix to the culvert site. There they unloaded into bottom-dump buckets that were handled by cranes for emptying into the forms. All the concrete for slab and cradle was placed in this manner.

Concrete pipe for the triple-barrel culvert came from two sources. Pipe for the two 66-inch outer lines was delivered by trailer from the Hume Pipe Co. in Boston, Mass. The New England Pipe Co. supplied the pipe for the center 72-inch line from plants at Lynn and Newton, Mass. While 5-inch-thick reinforced walls were specified for the pipe, some of the sections, in order to expedite delivery, came in 8-inch thickness. Lengths of the sections were 4, 6, and 8 feet. For intermediate drainage there are three inlets entering the long pipe. Backfill reaches a height of 25 feet in some places over the top of the pipe.

Grading

In removing the old soil-cement base around the hangars, the contractor first dropped a 2-ton weight on the pavement at approximately 5-foot centers both ways. This shattered the already cracked and broken material so that it was easily dug up by a Bucyrus-Erie rock rake mounted on the front of an International TD-18 tractor. A Northwest 1½-yard shovel then loaded the rubble into a fleet of four Koehring 6-yard Dumptors that hauled the material away for use on the fills.

Most of the grading for the new runway and taxiway was at the south end of the site where the extension pushed out beyond the original boundary of the field. Earth excavation totaled around 1,000,000 cubic yards, the greater part of which was done under a subcontract by J. R. Cianchette, Inc., of Pittsfield, Maine. Cuts and fills were fairly shallow, the maximum being only 8 feet. Not enough material was available on the site for either the fills or the gravel subbase, but borrow pits were available 1½ miles away. Some gravel was also obtained when the old runways were torn up.

Borrow-pit excavation, amounting to about 700,000 cubic yards, was handled by a Euclid loader pulled by an Allis-Chalmers HD-20 tractor and working with a fleet of hauling equipment that included Euclids, Tournawagons, Athey wagons pulled by Caterpillar DW10's, and various trucks. Dozers and motor graders leveled and shaped the fills in 8-inch lifts—except for the last foot which was put down in two 6-inch compacted lifts.

The lower 8-inch lifts were compacted to at least 90 per cent of maximum density at optimum moisture as determined by modified AASHO methods. The two upper 6-inch fill lifts and the upper 6 inches in cuts was compacted to 95 per cent AASHO standards. This latter requirement was also maintained for the gravel subbase, put down in two lifts as a foundation for the pavement, and extending one foot beyond the pavement on each side. Tamping rollers were not effective in the sand and gravel, so compaction was achieved with the heavy equipment, strings of pneumatic-tire rollers pulled by crawler tractors, and with an O. J. Porter 55-ton rubber-tired compactor.

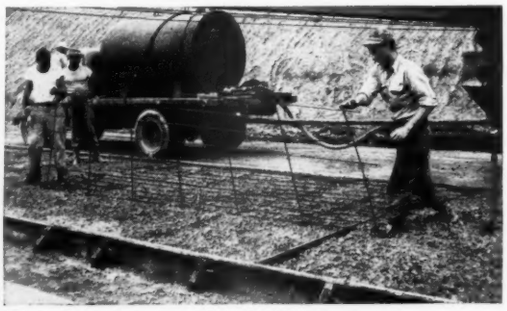
Grading of the field was practically completed in three months — July, August, and September. Excellent haul roads, 30 to 40 feet wide, which were constantly maintained, were an important factor in the good progress displayed with the dirt-moving. The big culvert was also nearly finished, so that paving got under way shortly after Labor Day.

Quarry on Site

The big rock ledge that blocked the extension of one of the original runways served as a quarry in the processing of crushed stone for the macadam base course under the bituminous-

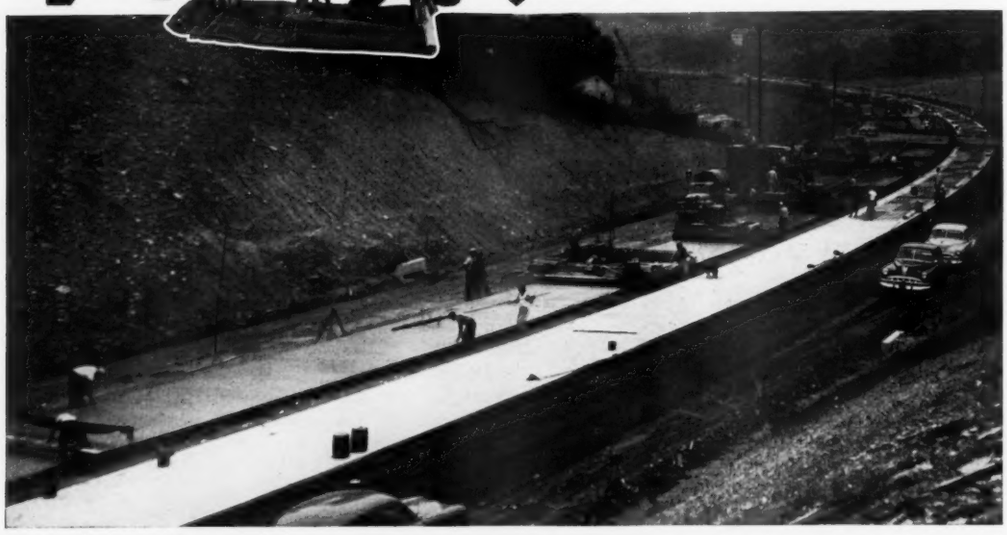
(Continued on next page)

Left to right: Don MacKay, project manager of S. J. Groves and Sons, Inc.; Walter Jones, resident engineer for Pennsylvania Department of Highways; and E. Miller Smith, job superintendent, discuss the day's operations.



Bethlehem Hinged Bar Mats can be handled easily by only two men. With bottom section placed, hinged portion needs but slight push to fall into position.

Road-building caravan moves into one of the new highway's long curves. At *right*, Bethlehem Hinged Bar Mats lie along the finished strip, ready for placing.



Express Highway Links Philadelphia and Turnpike

The four-lane Schuylkill Express Highway will provide a fast, direct route between Philadelphia and the Pennsylvania Turnpike's Eastern terminus at King of Prussia. S. J. Groves and Sons, Inc., was the contractor for the 2-mile section extending from West Conshohocken to Gulph Mills. Bethlehem furnished dowel units, bar mats, hook bolts and reinforcing bars.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

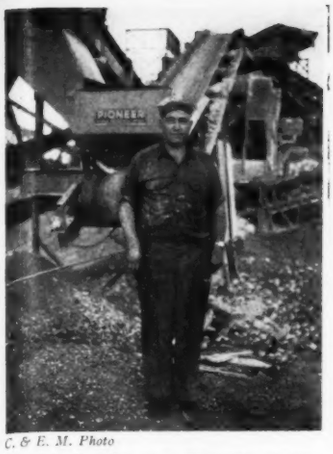
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
Guard Rail Posts • Wire Rope and Strand • Pipe
Hollow Drill Steel • Spikes • Bolts and Nuts • Tie-Rods
Timber Bridge Hardware • Sheet- and H-Piling

BETHLEHEM STEEL

Skip swings down for a new load. Bethlehem Dowel Units, visible between road forms, hold dowels in accurate alignment, horizontally and vertically. These units minimize load-transfer problems caused by heavy wheel loads.



C. & E. M. Photo

Ralph Dunphy was Hinman's superintendent at the Pioneer gravel-processing plant, on the Naval Air Station job in Maine.

concrete pavement. Linn Haftraks hauled the rock from the quarry to the receiving hopper of the Diamond 24 x 36 primary crusher. From there it was carried on a 30-inch belt to a Diamond 12 x 36 secondary crusher. Another conveyor belt, 24 inches wide x 40 feet long, moved the material upward to a Pioneer screening plant beneath which were storage bins. Each of the crushers was driven by a Caterpillar D13000 diesel engine. A generator powered by the diesel at the secondary crusher supplied current to motors running the last belt and the screening plant. The crusher turned out about 1,000 yards of processed stone in a single 12-hour shift.

From the crusher, trucks hauled the material to Adnun Black Top Pavers that laid the 3-inch-down coarse stone in two layers for the macadam base. Each layer was choked with ¾-inch stone, and compacted to a 3½-inch thickness by a Buffalo-Springfield 10-ton 3-wheel roller. The 7-inch course of dry-bound macadam was then given a tack coat of MC-1 asphalt applied at the rate of 0.3 gallon to the square yard.

Gradation for the gravel subbase was as follows:

Sieve Size	Per Cent Passing
3-inch	100
No. 40	not more than 70

Gradation for the stone in the dry-bound macadam was as follows:

	Per Cent Passing	
Sieve Size	Coarse Aggregate	Choke Aggregate
3-inch	100	....
2½-inch	90-100	....
2-inch	35-70	....
1½-inch	0-15	....
¾-inch	0-5	100
⅜-inch	....	90-100
No. 100	....	10-30

Bituminous-Concrete Pavement

Adnun Black Top Pavers were also used in laying the two 1½-inch courses of bituminous-concrete pavement. The same mix used in both courses met the following gradation requirements:

Sieve Size	Per Cent Passing
½-inch	100
⅜-inch	89-100
No. 4	73-85
No.10	57-70
No. 40	31-42
No. 80	19-26
No. 200	5-9

AP-3 asphalt cement, 85-100 penetration 6-8%

Plant-mix was turned out in a Cedarapids 1-ton pugmill asphalt plant which W. H. Hinman, Inc., had previously set up near Lisbon Falls, Maine, for a highway project. The plant was adjacent to a gravel pit that produced an excellent grade of aggregate for the mix. Gravel was processed in a Pioneer 46-VE diesel-electric portable duplex crushing and screening plant.

At the pit a Bucyrus-Erie ¾-yard shovel loaded the pit-run gravel into two Chevrolet 3-yard trucks that hauled the material a few hundred feet to a 6-yard wooden receiving hopper at the Pioneer plant. A mechanical feeder pushed the material along to a 30-inch x 28-foot belt which moved it up to a middle 4 x 12-foot screen of the 3½ decks. The wire mesh opening on this screen was ¾-inch. Oversize from this screen went into a 14 x 28 jaw crusher, and from there by return conveyors to the top deck, a ⅞-inch screen. Oversize from the ⅞-inch screen went to a 36 x 22-inch roll crusher, and from there via a 24-inch x 38-foot return conveyor back up to the top deck.

Gravel passing the ¾-inch screen but retained on the lower ⅜-inch screen was carried off on a 30-inch x 36-foot conveyor to a 21-yard coarse-aggregate bin at the right side of the plant. The finer material passing the ⅜-inch screen went off on a similar conveyor to another 21-yard bin at the left of the plant where it was classed as sand. Only two sizes of aggregate were processed for the plant-mix.

The plant was powered by a Murphy

(Concluded on next page)

4 Reasons why IGLOO is your best buy . . .

1. Corrugated outer shell of heavy galvanized steel and cross-braced construction make them stronger . . . they last longer.

2. Dow Styrofoam insulation in heavy duty models keeps water colder longer . . . saves ice.

3. Double-locked seams make them absolutely leak-proof.

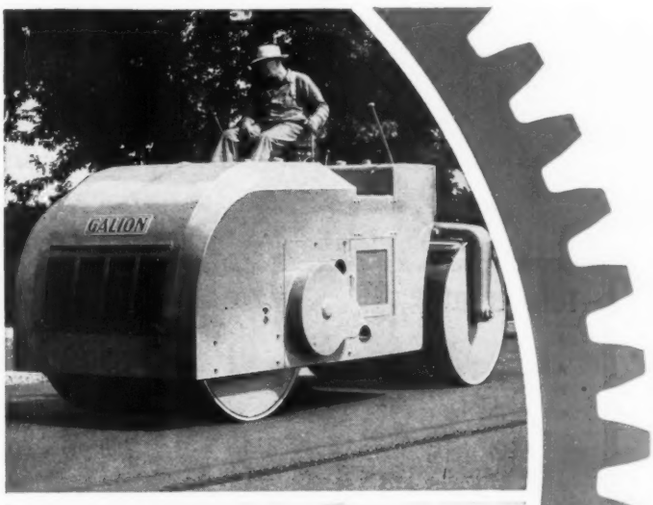
4. Flush-mounted spigot insures against damage and leakage.

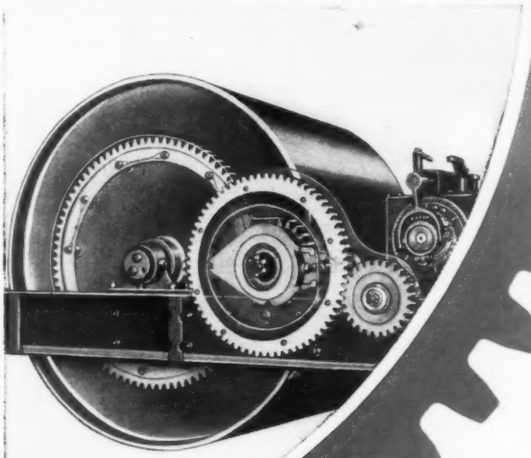
AT YOUR HARDWARE OR SUPPLY STORE

Igloo Water Cans and Coolers are available in 1½, 3, 5 and 10-gallon sizes, in Standard or Heavy Duty models.

BETTIS CORPORATION

P. O. Box 9091 Houston 11, Texas





REMEMBER! ROLLER RELIABILITY – depends largely on its FINAL DRIVE mechanism

SPUR GEAR GALION FINAL DRIVE

YOUR GOOD MECHANICAL JUDGMENT

will recognize the following features of Galion Tandem Roller Final Drive as sound, performance-proved, time-tested engineering.

- GALION FINAL DRIVE GEARS are all *Spur Gears.*
- GALION FINAL DRIVE is a 2 *step* gear reduction train thru 4 spur gears — a straight-line drive.
- GALION FINAL DRIVE *greatest* gear ratio is only 5 to 1.
- GALION FINAL DRIVE spur gears are special alloy steel, accurately machine cut and heat-treated. No ordinary, uncut, cast gears are used.
- GALION FINAL DRIVE has *no small beveled pinion gear driving a large bevel ring gear* on the roll.

IF YOU KNOW YOUR GEAR MECHANICS

you know that *gradual* reduction and low speeds (each gear with roller bearings) plus a straight-line spur gear train, give the least friction and consequently have the least gear wear. That is why Galion Final Drive gears *stay in line*, wear the least, and consequently last longest without adjustment or replacement.

TANDEM ROLLERS

THE GALION IRON WORKS & MFG. CO.

General and Export Offices — Galion, Ohio, U. S. A. Cable address: GALIONIRON, Galion, Ohio

U. S. Naval Air Station Has Expansion Program

(Continued from preceding page)

diesel engine, with a 12-inch x 100-foot endless drive belt operating the jaw crusher; the roll crusher was driven by a V-belt from the jaw crusher. Through another V-belt the diesel drove a 40-kw generator that supplied current for several electric motors running the feeder, conveyors, and vibrator screens.

From under each of the aggregate bins, trucks loaded the material and hauled it from the crushing and screening plant to the asphalt plant where it was stockpiled. A Bucyrus-Erie ¾-yard crane and clamshell charged the bins on the asphalt plant. Bitumen was supplied by Standard Oil Co. Plant-mix was hauled to the Naval Station in 15 trucks carrying 7 tons of material. Haul distance was 18 miles.

Concrete Paving

For the concrete paving, the contractor set up a batch plant alongside U. S. 1 at the north side of the base, and dry-batched material to a Ransome 34-E dual-drum paver that placed the concrete within the forms. Dragon bulk cement was used, but Darex air-entraining agent was added to each batch at the paver. Tank trucks supplied Brunswick city water for the mix.

Paving preparations included a final shaping of the gravel base course by an Adams motor grader, after which the Blaw-Knox forms were set and pins driven with a pneumatic hammer powered by a truck-mounted Ingersoll-Rand 105-cfm compressor. A Cleveland Formgrader prepared the shallow trench in which the forms were laid. Excess material was removed by a Buckeye subgrade planer, and a final rolling was given by a Galion 10-ton 3-wheel roller.

Paving was done in 25-foot lanes, with a dummy longitudinal joint down the center dividing the strip into two 12½-foot sections. Contraction joints, with Bethlehem Steel Co. assemblies for the load-transfer devices, were at 15-foot intervals. Finishing equipment included a Blaw-Knox spreader, Blaw-Knox finishing machine, Koehring Longitudinal Finisher, and a Flex-Plane machine for cutting the joints. A belt was mounted on the front of the latter unit. The last piece of equipment in line was a Flex-Plane spray rig that applied Ritecure compound for curing the concrete.

Quantities and Personnel

The contract for the improvements at the Brunswick base was awarded on a lump-sum basis, and the items were not broken down. For his own convenience the contractor worked up an estimate from which the following major items were taken:

Clearing	112 acres
Earth excavation	980,000 cu. yds.
Gravel base material	99,000 cu. yds.
Culvert excavation	16,000 cu. yds.
Crushed-stone base	42,000 cu. yds.
Concrete pavement, 10-inch	45,000 cu. yds.
Pavement reinforcement	86,040 sq. yds.
Bituminous concrete	40,000 tons
Stabilized shoulders	22,300 cu. yds.
Asphalt for stabilized shoulders	134,000 gals.
Concrete in structures	7,000 cu. yds.
Reinforcement in structures	440,000 lbs.
Drop inlets and grates	100
Underdrain	6,900 lin. ft.
Reinforced-concrete pipe, 12-42-inch	8,000 lin. ft.
Loam, 6-inch	616,000 sq. yds.
Mulch	850,000 sq. yds.

Fay, Spoffard & Thorndike, architect-engineering firm of Boston, Mass., was retained as consultant on the design and plans for the improvement. Engineering inspection of the paving and soil-compaction work was handled by The Thompson & Lichtner Co. of Brookline, Mass.

Personnel for W. H. Hinman, Inc., included Philip Corey, Vice President and General Superintendent; John Rice, Project Manager; and the following superintendents: Howard B. Fleming—concrete; Nick DePatsy—grading; Cy Perkins—drainage; Dick Bascon—bituminous; and Ralph Dunphy at the gravel-processing plant.

Representing J. R. Cianchette, Inc., subcontractor on the grading, were Louis SanAntone, General Superintendent; and John Crocker, Superintendent at the stone-crushing plant.

For the Navy Department, Commander Kenneth E. Pearce, CEC, USNR, is Resident, Officer-in-Charge of Construction, U. S. Naval Air Station, Brunswick, Maine. He is assisted by Lieutenant Raymond J. Hodge, CEC, USNR. District Public Works Officer for the First Naval District is Commander Henry J. Fitzpatrick, CEC, USN, with headquarters at Boston.

Remember—safety is no accident!

Manual on Steam Generators

Preparation of an architects' and engineers' manual on packaged steam generators has been completed by the Industrial Division of York-Shipley, Inc., 254 Jessop Place, York 4, Pa. It contains all the data required for laying out and writing specifications for boiler installations that require high-pressure steam, low-pressure steam, or hot water.

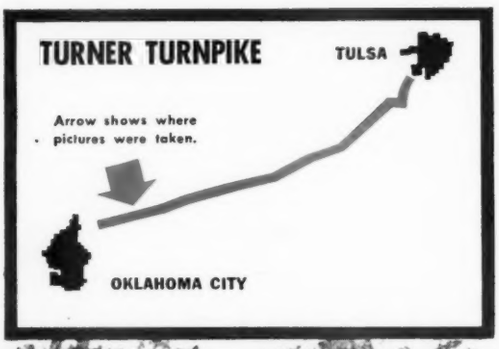
Enclosed in a leatherette binder, the manual contains complete specifications of the Steam-Pak models ranging in size from 15 to 250 hp. Each model can be fired with light oil, heavy fuel oil, gas, or a combination of gas and oil. Data given include a complete description of each boiler and its firing equipment. Diagrams show the piping requirements and connection sizes of each steam generator. Electrical-wiring diagrams and Steam-Pak output charts are also included.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 717.

Lima-Hamilton Texas Mgr.

R. W. Head is the new Southwest Territory District Manager of the Lima-Hamilton Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio, shovel and crane manufacturer. Mr. Head, who succeeds R. A. Otterness, will make his headquarters at Dallas, Texas, and his territory is New Mexico, Oklahoma, and Texas.

Turning on the Power on the Turner Turnpike



"Big Red"—the International TD-24—carries the load for contractors on Oklahoma's new superhighway

Windrow Loader

A new stockpile and windrow loader has been announced by Athey Products Corp., 5631 W. 65th St., Chicago 38, Ill. The Force-Feed HiLoader features a full-floating feeder suspended from two coil springs and a pivot which allow the paddle blades to float over the contours of the windrow. An auger gather-feeder speeds up loading from stockpiles and wide windrows. The spiral blades extend to the moldboards of the gather and keep a steady flow of materials feeding inward to the paddle blades.

The 30-inch conveyor belt is cleated to handle snow, sand, and other light materials as well as heavier earth, rock, etc. A swiveling discharge conveyor is another feature of the HiLoader. It can be directed 45 degrees right or left of center and is controlled hydraulically from the operator's seat. The operator's platform is on the left side for unobstructed visibility in all directions.

The new Athey Force-Feed HiLoader loads up to 25 cubic yards a minute in snow and up to 10 cubic yards a minute in other materials.

A Ford 95-hp 6-cylinder engine powers the unit, which can travel at speeds up to 19 mph. Loading speeds range through four gears from 0.3 to 1.92 mph. A short wheelbase is said to make the machine extremely maneuverable: 23 feet are required for a nonstop turn. The entire unit is 34 feet 7 inches long. Larger tires increase traction and flotation.

The new HiLoader is said to load up to 25 cubic yards a minute in snow and up to 10 cubic yards a minute in other materials.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 782.

12,500,000 cubic yards of earth are being moved to build the great new Turner Turnpike—a four-lane, limited access superhighway between Oklahoma City and Tulsa, 88 miles away.

Contractors on the job report that their International TD-24s are moving more dirt per day, because they have more power, more speed and more steer-ability than any other crawler on the market.

As Vernon Pool of Pool Construction Co. says, *"Nothing can beat these TD-24s. We have ten of them on our section of the Turner Turnpike. They out perform any other tractor I've ever seen. Our operators love them.*

"We've had all kinds of tractors, but the next ones I buy will be Internationals, too. One big reason besides their performance is that we always get prompt service from our International Distributor."

Get the low-down on TD-24 superiority from your International Industrial Distributor. Then consider the service he offers you—and you'll be a TD-24 man yourself from then on in!

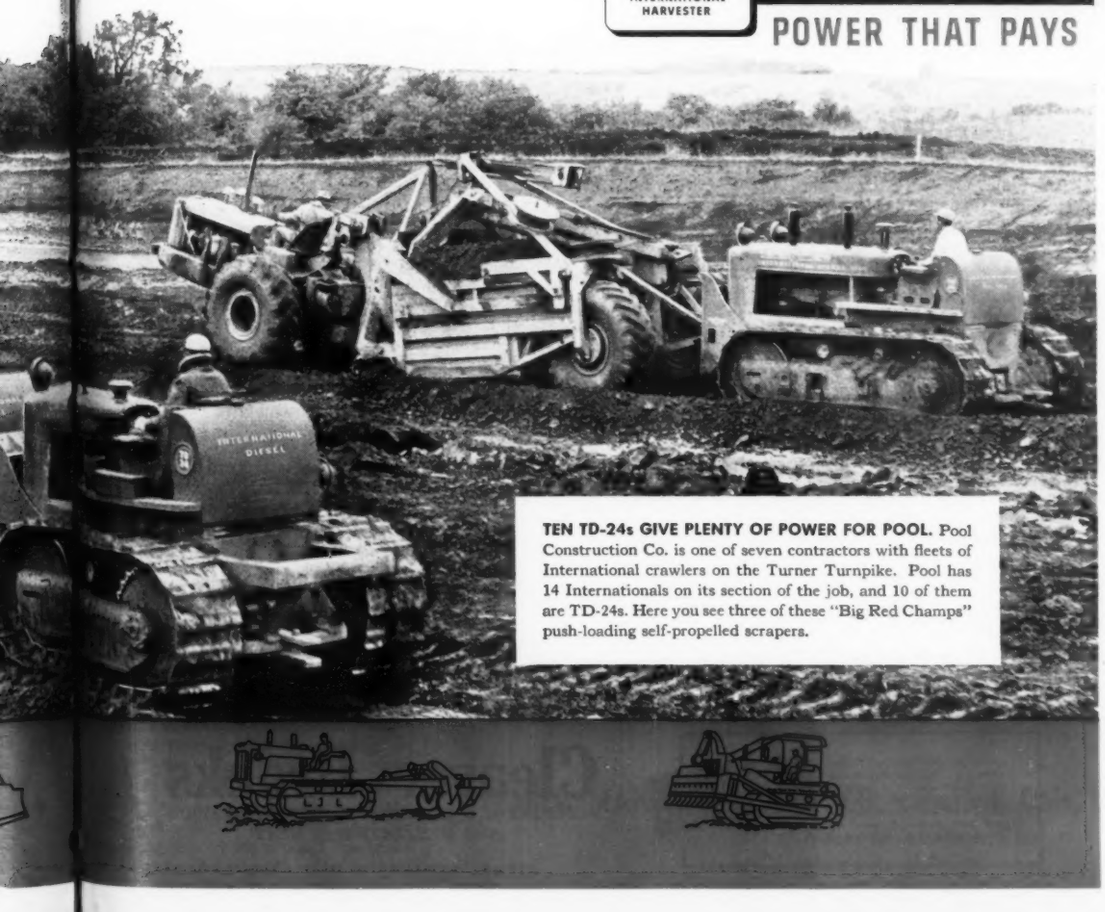
INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.

HAPPY CONTRACTOR is Vernon Pool (right) as he tells International Distributor D. V. MacDonald how good his TD-24s are. "One of them has 6,655 hours on the meter in three years," says Pool, "and it's working right along with the others."

INTERNATIONAL HARVESTER

INTERNATIONAL

POWER THAT PAYS



TEN TD-24s GIVE PLENTY OF POWER FOR POOL. Pool Construction Co. is one of seven contractors with fleets of International crawlers on the Turner Turnpike. Pool has 14 Internationals on its section of the job, and 10 of them are TD-24s. Here you see three of these "Big Red Champs" push-loading self-propelled scrapers.

Cap This One if You Can

A world record in trenching is claimed by George W. O'Connor, head of the O'Connor Construction Co. of Fromberg, Mont. On October 4, 1951, during the construction of a gas pipeline from the Two-Dot gas wells to Warren, Mont., Mr. O'Connor's crew, using a single Cleveland trencher powered by an International Harvester UD-9 diesel engine, dug 17,200 feet of 22 x 40-inch trench in 9 hours on a single working day.

Mr. O'Connor gave due honor to his chief operator, Fagin Rehm of Burley, Idaho, whom he described as "the best ditcher operator in the area"; he also reported his crew had the advantage of ideal soil for the trenching operation. All the same, Mr. O'Connor is reliably quoted as saying: "As far as I know this is a world's record for a one-unit ditcher, and most ditch men would call me a liar if I made this statement to them."

Far from calling Mr. O'Connor a liar, we are all admiration. But *is* his performance a world record? Will any reader who can beat the 17,200-foot job with a record of his own please share it with us?

Folders on Crushing Plants

Literature on portable and stationary aggregate plants is available from Diamond Iron Works, Inc., 18th Ave. and N. Second St., Minneapolis 11, Minn. Four portable models which produce from 40 to 200 cubic yards per hour are covered.

Each plant has a jaw crusher, roll crusher, 2½-deck vibrator screen, underscreen hopper, feed conveyor, undercrusher conveyor, Rotor-Lift, and feed hopper. These are mounted on a gooseneck frame with full-truck or semitrailer hitch. Rear-load equalizers distribute the weight over the 4 dual wheels in back and 2 dual in front.

The booklets illustrate the continuous flow of material as it is first screened, then crushed, then lifted and re-screened, and finally carried to trucks or hoppers.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 765.

Spoor Rejoins Air Reduction

Dale D. Spoor, former Chief of the Industries Branch of the Metalworking Equipment Division of the National Production Authority, is now Manager of the Airco Equipment and Process Sales Department, Air Reduction Sales Co., a division of Air Reduction Co., Inc., New York, N. Y. Mr. Spoor, who has been associated with Airco for many years, was granted a leave of absence in 1951 to take over a job, now completed, in the NPA. He heads a new department in Airco which includes equipment, arc-welding, process-development, and general technical sales.

Multipurpose Blade

A multipurpose blade for grading and roadside work is announced by Harry Ferguson, Inc., 3639 E. Milwaukee Ave., Detroit 11, Mich. The 6-foot unit has a 14-inch-high moldboard and can be rotated a full 360 degrees, permitting either a pulling or pushing action. In addition, it can be angled right or left 15, 30, 45, and 60 degrees in forward or reverse position.

Hydraulic control adjusts the depth of cut. Two stabilizer bars prevent side sway. Adjustments can be made to offset the entire moldboard and blade when working near fences or buildings.

Scarifier, side plates, blade extension, and grader wheel are some of the attachments available. The scarifier, which folds up when not in use, breaks up crusty soils or heavy turf. The blade extension and side plates are attached to increase capacity when loose dirt or snow is being removed. For final leveling operations, the grader wheel makes it possible to control the height of the blade with respect to the ground line.

Ferguson's new multipurpose blade for grading and roadside work has several attachments: a scarifier that folds up when not in use; extensions and side plates to increase capacity; and a grader wheel for final leveling.

By attaching the blade to the tractor links by means of an offset pin in the frame, it is possible to dig a V-ditch with a relatively small included angle.

When removing snow from gravel or concrete roads, skid shoes may be attached to avoid direct blade contact with the road surface.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 796.

Line of Welding Equipment

A pocket-size folder on welding and cutting equipment is issued by The K-G Equipment Co., Inc., 50 Broadway, New York 4, N. Y. It illustrates and gives specifications for the company's line of torches, cutting attachments, combination units, and welding machines, tips, and regulators.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 741.

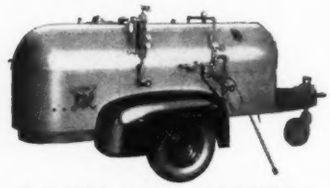
Export Manager for Diamond

Robert A. Slenes takes over the post of Export Sales Manager for Diamond Iron Works, Inc., Minneapolis, Minn., and its Mahr Mfg. Division, both of which make rock-crushing and processing equipment. Mr. Slenes has export and foreign banking experience and has served in U. S. Embassies abroad.

CLEAVER-BROOKS—DISTRIBUTORS

ALABAMA—J. D. Pittman Tractor Co., 500 N. 28th St., Birmingham 2; Burford-Toothaker Tractor Co., 2521 Halls Mill Rd., Mobile; P. O. Box 1591, Montgumery 2.
ARIZONA—Arizona Cedar Rapids Co., 1726 W. Jackson St., Phoenix.
ARKANSAS—Tri-State Equipment Co., Cantrell Rd. and Booker St., Little Rock.
CALIFORNIA—Cassen Hale Corp., 22101 Meekland Ave., Hayward; Standard Steel Corp., 5001 Boyle Ave., Los Angeles 58.
COLORADO—H. W. Moore Equipment Co., 6th and Acoma Sts., Denver 1.
CONNECTICUT—Deepheuse Equipment Co., 160-170 Farmington Ave., Berlin.
D. C., WASHINGTON 2—Hovey-King Co., 314-316 Randolph Pl., N.E.
FLORIDA—Florida-Georgia Tractor Co., Beaver and Huron Sts., Jacksonville; 3139 N. Miami Ave., Miami; P. O. Box 1511, Lakeland; Box 987, New Quiney Highway, Tallahasee; P. O. Box 2248, Tampa.
GEORGIA—W. C. Caye & Co., Inc., 787 Windsor St., S.W., Atlanta.
ILLINOIS—Hillsman Equipment Co., Box 170, Bloomington; 2000 N. Hawthorne, Melrose Park; Winner, Inc., 821 Main St., Peoria; 1319 Broadway, Rockford, 526 - 11th St., Rock Island.
IDAHO—Intermountain Equipment Co., Broadway at Myrtle St., Boise; 210 N. Fourth, Pocatello.
INDIANA—Reid-Holcomb Co., 1615 Kentucky Ave., Indianapolis.
IOWA—James W. Bell Co., Inc., 1720 1 Ave., N.E. Cedar Rapids; 2818 Fifth Ave., Des Moines 13.
KANSAS—The Victor L. Phillips Co., Box 1557, Wichita.
KENTUCKY—Bogle Equipment Co., 801 E. Third St., Lexington 47; 1212 S. Seventh St., Louisville.
LOUISIANA—Frank P. Fischer Engineering Co., 7924 Maple St., New Orleans 18.
MAINE—Parker-Danner Co., Riverside Drive, Augusta.
MASSACHUSETTS—Parker-Danner Co., 25 Factory St., Hyde Park 36; 71 Needham St., Newton Highlands.
MICHIGAN—Eddy & Co., 1377 E. 8 Mile Rd., Detroit 20; 2500 S. Pennsylvania Ave., Lansing 4; Straits Engineering Co., 400-2 Ashmun St., Sault Ste. Marie.
MINNESOTA—Ruffridge-Johnson Eq. Co., 250 Tenth Ave., S., Minneapolis.
MISSISSIPPI—Watkins-Aldridge Equipment Co., 812-916 S. State St., Jackson.
MISSOURI—The Victor L. Phillips Co., 15th and Baltimore Sts., Kansas City; The George F. Smith Co., 5215 Manchester Ave., St. Louis.
MONTANA—Hall-Perry Machinery Co., 304 Fratt Bldg., Billings; 802-812 E. Iron St., Butte; Ceram; P. O. Box 307, Great Falls; Missoula.
NEBRASKA—Anderson Equipment Co., 200 Merchants Nat'l Bank Bldg., Omaha 2.
NEW HAMPSHIRE—Parker-Danner Co., 507 Elm St., Manchester.
NEW JERSEY—R. E. Brooks Co., Route 17, Box 17, Hasbrouck Heights.
NEW MEXICO—R. L. Harrison Co., Inc., 1801 N. Fourth St., Albuquerque.
NEW YORK—Syracuse Supply Co., 76 Wall St., Binghamton; 2080 Military Rd., Buffalo 17; R. E. Brooks Co., 50 Church St., New York; Syracuse Supply Co., Perrville Rd., Olean; Van's Equipment Sales, Inc., Routes 9 and 20, Rensselaer; 1349 University Ave., Rochester; Syracuse Supply Co., 294 Ainsley Drive, Syracuse.
NORTH CAROLINA—North Carolina Equipment Co., P. O. Box 5006, Asheville; P. O. Box 1205, Charlotte; P. O. Box 128, Guilford; P. O. Box 655, Wilmington; 3101 Hillsboro St., Raleigh.
NORTH DAKOTA—Northwestern Equipment, Inc., 718 11th St., Bismarck; 901 Eighth St., Devils Lake; P. O. Box 110, Dickinson; P. O. Box 152, Fargo; P. O. Box 335, Minot; P. O. Box 626, Wahpeton.
NEVADA—Sierra Machinery Co., 307 Merrill Ave., Reno.
OHIO—The W. W. Williams Co., 914 Main St., Cincinnati; 18301 Brookpart Rd., Cleveland 11; 835 W. Goodale Blvd., Columbus; 1260 Canant St., Maumee.
OKLAHOMA—The Victor L. Phillips Co., 1101 E. Archer, Tulsa; 1222-24 W. Main St., Oklahoma City.
OREGON—Howard-Cooper Corp., Highway 99E, P. O. Box 433, Albany; Highway 99, P. O. Box 86, Central Point; P. O. Box 1, Coquille; First and Van Buren, Eugene; 5821 N. E. Glisan St., Portland 13; 225 E. 2nd Ave., S., Roseburg.
PENNSYLVANIA—The Capitol Equipment Co., 5100 Paxton St., Harrisburg; Alan A. Wood, 1649 N. Broad St., 905 Hardt Bldg., Philadelphia; Drave-Doyle Co., 2601 Preble Ave., N.S., Pittsburgh 12.
RHODE ISLAND—Parker-Danner Co., 139 Allens Ave., Providence.
SOUTH CAROLINA—South Carolina Equipment Co., 444 Gadsden St., Columbia.
SOUTH DAKOTA—Sioux Road Equipment Co., 500 E. Sixth St., Sioux Falls; Box 941, Rapid City.
TENNESEE—Wilson-Wessner-Wilkinson Co., 202 W. Morelia Ave., Knoxville; Tri-State Equipment Co., 124 E. Calhoun Ave., Memphis; Wilson-Wessner-Wilkinson Co., 310 S. 2nd St., Nashville.
TEXAS—Alamo Iron Works, Brownsville; Corpus Christi; Tri-State Equipment Co., 500 E. Overland St., El Paso; Conley-Lott-Nichols Machinery Co., 1311-19 S. Erway St., Dallas 1; 3601 Avenue "H," Lubbock; Tri-State Equipment Co., P. O. Box 472, Odessa; Alamo Iron Works, Santa Clara & Montana Sts., San Antonio 6.
UTAH—Kimball Equipment Co., 222 W. 17th St., S., Salt Lake City 10.
VIRGINIA—Hampton Roads Tractor & Equipment Co., W. 39th St. and Killam Ave., Norfolk; Natural Asphalt Corp. of Virginia, 1901 Hamilton St., Richmond.
WASHINGTON—Glenn Carrington & Co., 91 Columbia St., Seattle 4; Howard-Cooper Corp., 5045-55 - 4th Ave., S., Seattle 8; Intermountain Equipment Co., 611 E. Sprague, Spokane.
WEST VIRGINIA—West Virginia Tractor & Eq. Co., P. O. Box 473, Charleston; P. O. Box 587, Clarksburg.
WISCONSIN—The Stone Manufacturing Co., 321 N. 25th St., Milwaukee 3; Badger Equipment Sales, Inc., Route 2, Thiensville.
WYOMING—Studer Tractor & Equipment Co., East Yellowstone Highway, Casper.
ALASKA—Glenn Carrington & Co., c/o Westward Hotel, Anchorage.
CANADA—Mussens Canada, Ltd., Church St., New Brunswick, Fredericton; Coleman Machinery Co., Ltd., 101 Upper Water St., Nova Scotia, Halifax; Mussens Canada, Ltd., 65 Colborne St., Montreal 3; Ontario Equipment & Supply, Ltd., 111 Morton St., Toronto, Ontario; Frost Machinery Co., Ltd., 971 Erin St., Winnepeg, Manitoba; International Agencies & Machinery Co., 2315 Cambie St., Vancouver, B. C.; Mussens Canada, Ltd., Charest Blvd., Quebec.

GET YOUR
HOT OIL
ON THE JOB FASTER-WITH
LESS WORK-LESS FUEL-LESS WATER
with Cleaver-Brooks Equipment . . .



TANK-CAR HEATER

A Cleaver-Brooks Tank Car Heater is the starting point for fast work on any construction project. A faster job means man hours saved — contracts completed on time and without penalties. Designed for fast steaming, this unit gives you 125 lbs. steam pressure in 20 minutes with high heat transfer and low fuel consumption. Available in two sizes, skid or trailer mounted—Two car heater (28 bhp), Three car heater (42 bhp).

PUMPING BOOSTER

The Cleaver-Brooks Pumping Booster heats only the amount of material required — not necessary to heat entire car. No steam or water required for operation with this oil fired, high efficiency unit. Cleaver-Brooks pumping boosters heat to high temperatures faster through the exclusive flow-equalizer feature. Available in two sizes, skid or trailer mounted — No. 1 Booster, capacity approx. 300 gph, temperature raise 25 to 35°F., No. 2 Booster, capacity approx. 350 gph, temperature raise 45 to 55°F.

It all sums up to more work and more profit with a Cleaver-Brooks Tank Car Heater or Pumping Booster. Write today for further information.

CLEAVER-BROOKS CO., 396 E. KEEFE AVE., MILWAUKEE 12, WIS.

Write on Your Business Letterhead . . . For the Bituminous-Mix Calculator — a ready reference slide rule showing weight of mix needed in lbs. and tons based on area and depth of area to be covered.

Cleaver-Brooks
BUILDERS OF EQUIPMENT FOR THE GENERATION AND UTILIZATION OF HEAT

STEAM BOILERS • OIL AND BITUMEN
TANK-CAR HEATERS • DISTILLATION EQUIPMENT • OIL AND GAS-FIRED CONVERSION BURNERS

A New Water Plant For Council Bluffs

Heavy Ground Water and Intricate Formwork Plagued Builder Of New 8,000,000-GPD Purification Plant in Iowa

By MICHAEL A. SPRONCK
Associate Editor

• THE new Council Bluffs, Iowa, water-purification plant is set in a colorful landscaped park on the cottonwooded banks of the Missouri. An excellent example of engineering achievement combined with architectural beauty, it replaces an obsolete plant built back in 1881. Larsen Brothers of Council Bluffs got the $1,200,000 general contract for its construction, awarded by the City on February 1, 1950. The contract included everything except mechanical equipment and called for completion by January, 1952.

Liberal use of plate glass, glass block, and buff-colored brick facing gives the plant its modern appearance. New interior designs presented some interesting problems for the contractor, especially in concrete forming. Intricate U-shaped wash-water troughs in the filter gallery, hanging baffles for the flocculation basins, ice curtains of new design—all served to test the ingenuity of the carpenter superintendent.

Plant Layout

The 8,000,000-gpd plant was designed by Burns & McDonnell Engineering Co., Kansas City, Mo., and provides presedimentation, prechlorination, coagulation with lime and alum, filtration, and post-chlorination of the water. It will eventually be used as a softening unit and can be expanded to twice its capacity by construction of dual facilities in the future.

Water is taken from the "Big Muddy" and pumped at the intake station to two 100-foot-diameter primary settling tanks. Then it flows by gravity through 1,000 feet of 24-inch prestressed pipe to the flash-mixing chamber where chemicals are added. Flocculation and clarification (also termed coagulation) follow, and are repeated in a second duplicate installation. A combined mixing and pumping takes place between the first and second treatment to restore the head needed for gravity feed through the rest of the plant. The water flows from the secondary clarifier to the filter gallery in the 1,500,000-gallon clear-well underground reservoir before delivery to the city's high-pressure system at 125 psi.

Excavation

Work started March 20, 1950, a month and a half after the letting date. The intake station and one of the primary settling tanks had been built under a previous contract, the remainder of which was canceled in 1945 because of material shortages. The access road and part of a spur of the Illinois Central Railroad were also in place. The spur was used during construction to supply aggregates and cement; it will feed the operating plant its necessary supply of chemicals and other materials.

A Link-Belt Speeder LS-85, mounting either a 1-yard Hendrix dragline or a ¾-yard Blaw-Knox clamshell, whichever was needed, did the digging on most of the job. Dirt was dumped into a couple of 4-yard Ford trucks and spoiled, or stacked, right in the plant area. Much of it was used for backfilling the berms around the tanks and basins. All topsoil was kept for landscaping. A Model K Allis-Chalmers tractor-dozer and a Caterpillar D2 with a Trackson 1-yard loader did the rehandling and backfill work. Sheepsfoot rollers provided compaction in open areas, while two Ingersoll-Rand Model 34 tampers gave proper soil densities around the foundations and basin walls.

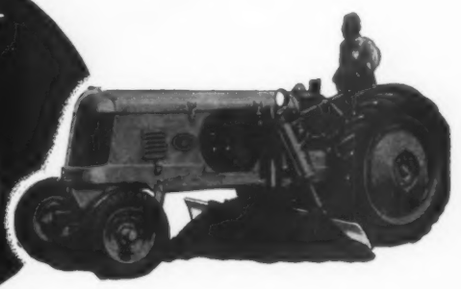
The 1,000-foot trench between the primary tanks and the main part of the treatment plant was opened to an average depth of 8 feet by a Parsons 310 Trenchliner. Using side cutters,

(Continued on next page)

Larsen Bros. Photo

This aerial view of Council Bluff's new water plant while under construction shows the Missouri River in the background. Upper right: intake structure and primary tank. Center, left to right: clarifiers, flocculation chambers, main building, and foundations for an underground reservoir. In the foreground, the concrete plant appears between the railroad and the access road.

Some of the Jobs HUBER MAINTAINERS Are Doing



NATIONAL GOVERNMENTS

Grading and maintenance work on highways and secondary roads in national parks, reservations, national public lands.

STATES

Highway grading and maintenance service of many kinds including berm grading, mowing, ditch cleaning, etc.

COUNTIES

Highway and secondary road grading and maintenance work. Counties owning attachments keep HUBERS busy every month of the year.

MUNICIPALITIES

Street and alley grading and maintenance; every type of maintainer attachment is in municipal service.

TOWNSHIPS

Townships charged with road maintenance are among favorite users of Huber Maintainers for grader and maintenance work.

PUBLIC GROUNDS

Parks, playgrounds, conservation areas, publicly-owned beach areas need and use HUBERS for grader and maintenance service.

OIL FIELDS

HUBERS are at work in the oil fields, grading and maintaining off-the-highway roads and building dams around oil wells and storage tanks.

CEMETERIES

Cemeteries keep HUBERS busy every month, grading and maintaining drives, mowing, developing new grounds, removing snow, patching pavements, etc.

AIRPORTS

HUBERS are tailor-made for airport service, grading unpaved areas, patching paved areas, mowing, removing snow, towing planes, etc.

LOGGING

Grading and maintaining logging camp roads, mowing, bulldozer service.

INDUSTRIES

Many industrial users include factories with sizeable grounds and miles of roadways; lift loader widely used for cleanup work around factory sites.

MINES

Grading and maintenance of roadways; broom widely used around strip mines to sweep coal veins before removal.

ESTATES & RANCHES

Grading and maintenance of roadways; lift loader for cleanup; mower widely used.

RACE TRACKS

Grading and maintenance of track and of surrounding roadways and grounds.

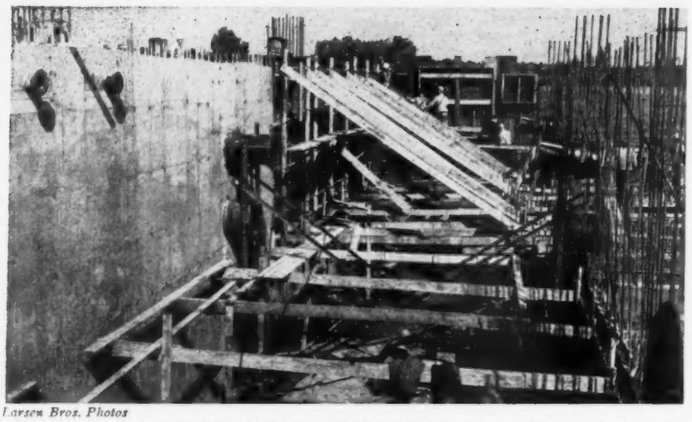
CONTRACTORS

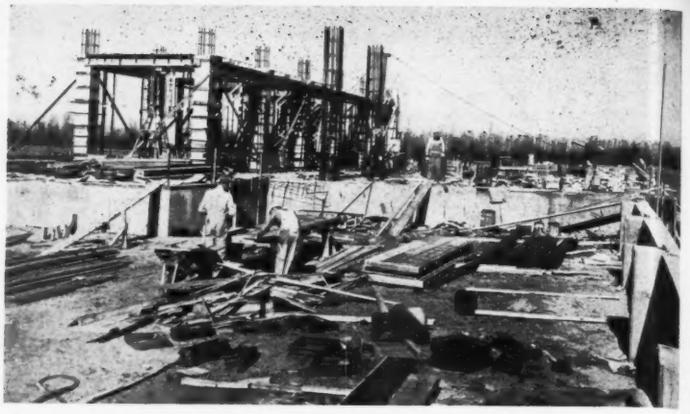
Contractors, large and small, in all kinds of contract work, are enthusiastic HUBER users. They like versatility of HUBERS, ability to move rapidly from one job to another.

HUBER MANUFACTURING CO. • Marion, Ohio, U. S. A.

Manufacturers of Huber Maintainers, Graders and Complete Line of Rollers

HUBER





Larsen Bros. Photos

The left-hand picture of the filter-pipe gallery gives an idea of the tough formwork problem; heavy pieces of filter pipe were cast in place and may be seen hung in the steel at right. In the other picture, men work in the main building. They used Ceco clamps for the RC columns and Ceco adjustable steel shores for the next floor.

A New Water Plant For Council Bluffs

(Continued from preceding page)

the machine chewed out a 48-inch-wide trench, giving plenty of working room for the installation of the 24-inch prestressed Lock Joint pipe.

Ground Water a Serious Problem

The fact that the river was less than a hundred yards from the plant made ground water a problem on much of the work, and only levees kept the river out of the area altogether during high waters. Excavating crews first hit the water table while digging the sump for the plant's high-pressure pumps. The bottom of the sump was at elevation 963. High water in the river was at 985 at the time. Fortunately the sump area was small, about 9 x 9 feet. Even so, the Stang wellpoint system—60 risers on an 8-inch header—pulled out 40,000 gph, taking the table down to elevation 960.

Wellpoints also had to be used for the sanitary sump in the back of the main building. At elevation 964 the contractor ran into very wet sand. When a sand boil broke through, the crews dumped about 125 cubic yards of dirt into a hole less than 20 yards square, but it just kept disappearing. They finally gave up, and later the wellpoints were moved over to take care of this hole.

Structures

The 100-foot-diameter prestressed primary tank rests on sand fill. Its floor is of 8-inch reinforced concrete and it has a 17-foot-high x 6-inch-thick circular core wall. When the wall had cured it was prestressed by the Pressure Concrete Co. of Chicago, Ill., using steel bands and turnbuckles. A 2-inch coating of concrete was then pneumatically applied over the prestressing steel and a 2-inch grout surface later laid over the tank floor.

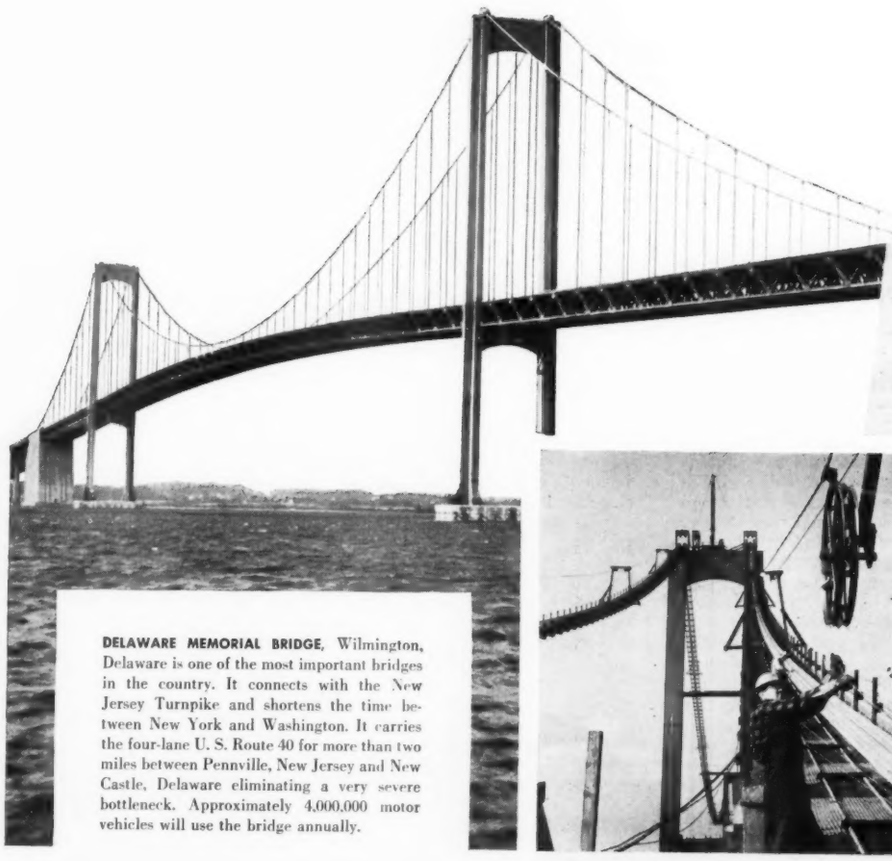
The mixing chambers, flocculation and clarifier basins, and machinery dry well lie right behind the main building and can be considered as a unit. The flash mixer adds chemicals to the water and passes it to a reinforced-concrete flume 3 x 5 feet in cross section, 67 feet long. The treated water is distributed to two flocculation basins where slowly revolving paddles insure thorough mixing of the chemicals.

The basins are 74 feet long, 70 feet wide, and 17 feet deep, separated by a dry well for the paddle-operating machinery. The floors are 6-inch reinforced concrete and slope toward the clarifier basins. The 12-inch RC sidewalls are supported on 16-inch footings; 8-inch-thick baffle walls connect with the sidewalls starting at a point 3 feet above the basin floor and cut across the flow of the water every 17 feet.

The clarifier basins are 70 feet square, 17 feet deep, and have bottoms that slope 1 on 12 to the center, like inverted cones. The two basins have one wall in common, battered both sides. The 12-inch RC outside walls are braced with counterforts every 18 feet. These are 1 foot 6 inches thick and 6 feet wide at the base. Spread foot-

(Continued on next page)

The bridge that raised itself



DELAWARE MEMORIAL BRIDGE, Wilmington, Delaware is one of the most important bridges in the country. It connects with the New Jersey Turnpike and shortens the time between New York and Washington. It carries the four-lane U. S. Route 40 for more than two miles between Pennville, New Jersey and New Castle, Delaware eliminating a very severe bottleneck. Approximately 4,000,000 motor vehicles will use the bridge annually.

SUSPENDING THE FIRST CABLES. Before any spinning of the main suspension cables could begin, four 2-inch American Tiger Brand Wire Ropes were strung from anchorage to towers and from tower to tower. On these were placed Cyclone Chain Link catwalks with wire rope railings to provide safe footing for the workmen.

Next a wire rope tramway system was installed to carry the hauling cable for the spinning wheels. The photo shows workmen picking the individual wires from the spinning wheel to form the main suspension cable. The 436 wires in each strand of the main cable are, in reality, two continuous wires which are connected to the anchorage at both ends by means of eyebars. The end of the wire from each successive reel was spliced to the end of the wire from the next reel and the ends of the last pair of wires of the strand were spliced to the ends of the first pair. It took 19 of these strands to form each of the main cables.

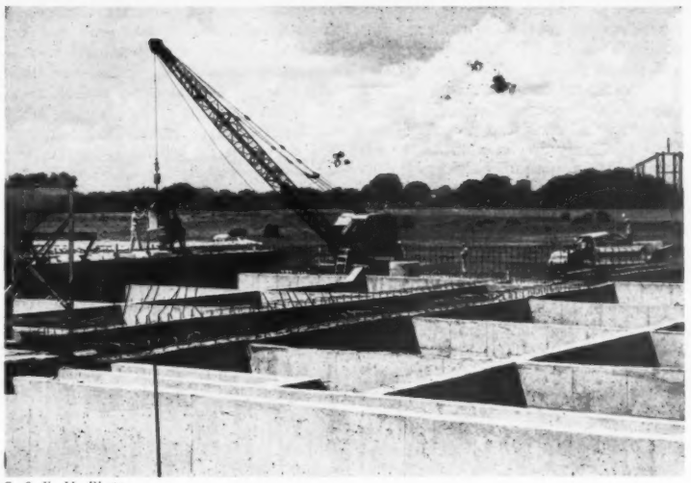
Interesting Facts

Total length of bridge—10,765 feet
Length of Main Span—2,150 feet
Length of each suspended side span—750 feet
Height of towers above piers 417 feet—about equal to height of a 35-story building
Clearance of main span above water—175 feet
Size of main wire cables—19¾ inches in diameter
Size of wire rope suspenders—2 inches in diameter
Total length of suspenders—56,000 feet
Estimated weight of superstructure—73,141,500 pounds
Total estimated cost of bridge—$43,900,000

ings support the walls—14 feet wide and 2 feet 2 inches deep under the common wall, 16 feet wide and 2 feet deep under the outside walls. The clarifier mechanism in the center of each basin is supported by a 3-foot 9-inch RC column on a 13-foot-diameter footing.

Ice curtains made of 4 x 8 sheets of ¼-inch Flexboard are hung from a special hinge at the inside edge of the sidewalk cover. A somewhat new development, they are designed to trap warm air up by the flume ports, prevent their freezing, and eliminate the cost of covering the basins completely—in spite of the severe winters in this area. The galvanized-steel hinges have removable brass pins so that the curtains can be taken off when the winter season is over. The flume ports are 4-inch cast-iron flange pipe spaced every 2 feet 6 inches along the basin walls. They provide for overflow of the treated water into the flume and on to the next stage.

The entire setup of flocculators and clarifiers is duplicated for a secondary treatment of the water. The two units are set side by side, separated by an open court. The only difference between them is in the mixing chambers: the second unit has a lift mixer that brings the water up one foot to compensate for the loss of head in the first stage.



C. & E. M. Photo

A concrete pour on the clarifier sidewalls of the Iowa water-purificaton plant: a Link-Belt Speeder with a ½-yard bottom-dump Gar-Bro bucket does the job. Those are flocculation chambers in the foreground.

The sand-filtration gallery for the next stage in the water treatment is located in the north end of the main building. Like the flocculation and clarifier-basin area, it presented the contractor with another maze of forms—especially for the troughs leading from the center basin walls to the wash-water gullets.

The main building is approximately 75 x 255 feet over-all and contains a storage room, shop, chemical feed room, high-service pump room, offices, and labs, in addition to the filter gallery. The basement is in two levels and framed in reinforced concrete. Steel framing was used for the floors above ground level.

Finally, there is the 1,500,000-gallon underground reservoir or clear well, 91 x 184 feet in area, 14 feet deep, and of reinforced-concrete construction. Its 8-inch roof is supported on 18-inch-square columns 15 feet 6 inches on centers in both directions; the columns are set on pedestals 2 feet 6 inches square, on 6 x 6-foot footings. The 14-inch walls rest on footings 1½ feet thick, 7 feet wide. The floor is 8 inches thick.

Formwork

If there were any apprentice carpenters on the job, they got a taste of some tough formwork—some good experience, too, in view of the variety of form types used. Sectional wood forms served for the primary tanks: 1 x 12 boards backed by 2 x 6 segments and double 2 x 6 vertical wales. The segments were spaced from 14 to 17 inches apart and the wales 24 inches on centers, diagonally braced by double 2 x 6 strongbacks. Universal Spi-Ro-Loc cone-nut assemblies tied the forms.

For the flocculation and clarifier basins, Larsen Brothers chose Economy steel forms, with 30-inch-square steel panels. In the main building the Economy forms were used along with ¾-inch plywood panels backed by 2 x 4 studs and double 2 x 6 wales with Universal ties. Walls of the clear well were formed with the Economy system. The columns were made with plywood sections and Ceco column clamps. The roof forms, plywood on 2 x 6 joists and 2 x 12 stringers, were supported by Ceco adjustable steel shores.

The wash-water troughs spanning the filter beds were just one example of some of the special forms required on this job. The insides of the troughs are U-shaped but the outer sides and bottoms are flat, with the outside corners cut at 45 degrees and the top edges rounded. Thirty-six of these troughs were required. Forms were built to make three troughs at a time, using a common base shored up from the basin floor. The outer sides and corners were built up from this base and a U-shaped metal form was hung inside. There was little the contractor could do about forming the rounded top edges, so he poured the edges high and after they had taken a partial set he had them rounded with a special inverted U-shaped trowel. With a little playing around to determine the best time to do the shaping, the job was run off O. K.

All of the wood forms were made up on the site using a DeWalt 12-inch radial-arm saw and three SkilSaws. The Flexboard for the ice curtains was cut by a 10-inch SkilSaw with a 9-inch carbide-tip toothed blade.

Concreting Setup

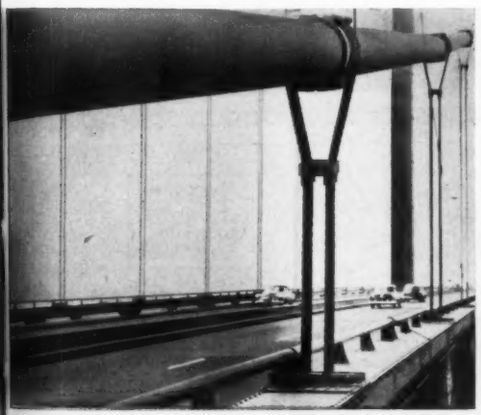
Over 10,000 cubic yards of concrete

(Concluded on next page)

by its own suspenders...

OR, HOW U·S·S TIGER BRAND WIRE ROPE HELPED TO BUILD AND SUPPORT THE WORLD'S 6th LONGEST SUSPENSION BRIDGE

IT'S QUITE A FEAT to build a two-mile long suspension bridge over deep water when the towers are as high as a 35-story skyscraper. But it's even more of a feat to use the wire rope suspenders for the original construction cable between towers, then take the same wire rope, cut it into proper lengths and use it again for the permanent vertical suspenders. It's like lifting yourself by your bootstraps. The photographs show how it was done.



56,000 FEET OF TIGER BRAND WIRE ROPE SUSPENDERS. These two-inch wire rope suspenders were made from the rope which was originally used to support the catwalks. This unique method of construction saved many thousands of dollars on the job. It was originated by the American Bridge Division of United States Steel Company and is now used in building most suspension bridges of this type.

BEAUTY IN STEEL. The Delaware Memorial Bridge represents the combined efforts of many different divisions of the United States Steel Company. The steel for spans and towers was made by the United States Steel Company, Cables and Wire Rope by American Steel & Wire Division, cement by Universal Atlas Cement Division and the bridge itself was erected by American Bridge Division.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL COMPANY
GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO · TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S AMERICAN TIGER BRAND WIRE ROPE

Excellay Preformed

USS TRADE MARK

UNITED STATES STEEL

A New Water Plant For Council Bluffs

(Continued from preceding page)

went into the structures. The concrete mixing was subbed to Quality Concrete Co., of Omaha, Nebr. A Blaw-Knox central-mix plant was set up at the south edge of the job at a point where the railroad and the access road joined.

Rock was brought in bottom-dump cars from Gilmore City, Iowa, dumped onto a 24-inch undertrack conveyor, and fed into a concrete storage pen. The sand and gravel were trucked in from pits about 25 miles away and stockpiled alongside the rock. Rock was rehandled by a Sargent crane with a ½-yard bucket; sand and gravel were raised to the 3-compartment bin by a vertical bucket elevator. The cement was supplied in bulk railway cars by Ash Grove Cement Co., Louisville, Nebr., and raised by screw conveyor to the 400-barrel cement bin. Water came from city mains. Ceco Steel Products Corp. supplied the 700 tons of reinforcing steel.

A Type 1 portland cement was specified with a 4,000-pound strength in 28 days. Though various mixes were used, a typical one-yard batch contained 2,240 pounds of sand and gravel, 858 pounds of rock, 536 pounds of cement, and enough water for a 3-inch slump. Half a pound of Pozzolith was added for each sack of cement (about 2.8 pounds for a typical 1-yard batch). The materials were fed from the storage compartments into a weigh-batcher and then into a Koehring 28-S mixer.

Two Ford trucks, each carrying two ½-yard Gar-Bro bottom-dump buckets, traveled the short distance from the mixer to the pour. The buckets were lifted from the truck bodies by a Link-Belt Speeder crane and held over the forms for dumping. The concrete was internally vibrated by two Jackson vibrators. Water seals were a bit of a problem. Spex called for a 16-gage galvanized-iron seal, 8 inches wide lap-riveted, and soldered. A continuous seal was placed around each of the construction joints.

During the winter Carrier gas-fired unit heaters kept the concrete at proper temperature. Larsen used four 113,000-Btu units, moving them around the job wherever needed.

The 2-inch grout floor covering for the clarifier basins and primary settling tank was placed after the rotating mechanisms were installed. These sweep along the floor of the tank and it is important that they be in uniformly close contact with the floor. This was accomplished by fitting a wood-and-metal-backed screed to the lower edge of the rotating arms, distributing the grout on the RC floor, and turning on the power. The rotating arms thus provided a smooth even floor finished to the exact elevations required.

Steel Erection

Steel for the main building was supplied by Gate City Steel Co. and set by a Northwest No. 6 truck crane mounting a 70-foot boom and 20-foot jib. Ingersoll-Rand 8A riveting guns, powered by a Jaeger 105-cfm portable compressor, pounded the rivets into place.

"Big lift" on this job was the placing of two steel tanks, each 70 feet long and 13 feet in diameter, on the second floor of the main building. The tanks hold the wash water to flush the filter beds at regular intervals. Each tank was brought in on a special carrying rig—a low-bed trailer with a fifth wheel at the rear holding a flat-bed trailer. A Northwest and a Lorain set the tanks on their saddle-block supports.

Brick, roofing, and other materials were carried to the upper floors of the main building by a job-built hoisting tower, its lift powered by a CMC single-drum reversible hoist. Most of the rooms in the main building are finished with tile interiors; a Clipper masonry saw cut this tile.

Personnel

The contractor's crews, averaging 75 men on a 40-hour week, were under the direction of George W. Larsen, General Superintendent. Jim Williams was Carpenter Superintendent and Arthur Kahler was Steel Foreman for Larsen Brothers. Frank B. Jensen, Water Works Superintendent for Council Bluffs, acted in the capacity of Resident Engineer on the job. W. S. Baum, Principal Engineer of Burns & McDonnell Engineering Co., supervised the design of the new plant.

Sound-Powered Phone Sets

Literature describing a line of sound-powered telephone systems is available from The Wheeler Insulated Wire Co., Inc., a division of Sperry Corp., Waterbury 91, Conn. Instruments from the simple hand-set to the full-service ringing-system set operate completely from the power derived from the voice. Ringing signals are produced in the larger systems by a press-lever unit. The sets are said to carry speech up to 20 miles.

The literature may be obtained from the company. Or by using the Request Card at page 16. Circle No. 803.

Diamond Chain District Mgr.

D. G. Viskniskki was recently appointed Chicago District Manager of Diamond Chain Co., Inc., Indianapolis, Ind., manufacturer of roller chains, sprockets, and flexible-shaft couplings. Mr. Viskniskki succeeds S. C. Hurley on the latter's retirement.

STRUCTO

LINE OF CONTRACTORS TOOLS

•

DEMOLITION TOOLS

•

PAVEMENT BREAKERS

All STRUCTO tools are made in the modern Arrow shops by skilled tool makers using only the finest quality steel.

In addition to the tools shown above the STRUCTO line includes air hammer tools, star drills, drift pins and pull pins. All are available in a wide variety of sizes and weights.

Every STRUCTO tool is backed by 37 years experience in making fine tools, plus a generous amount of good service to customers.

Write for Bulletin No. 851 showing the complete line.

ARROW TOOLS INC.

1900 So. Kostner Ave., Chicago 23, Ill.

1 of 10 Reasons Why UNIT is a Better Machine

UNIT gears, shafts, and many other essential working parts are scientifically heat-treated right at the factory, under the supervision of experts — men who work exclusively on these important operations. Fully equipped, the UNIT heat-treat department includes five, accurate, thermostatically-controlled electric furnaces, where these vital parts are made hard enough, yet tough enough to stand up under the most severe service. Aside from the electric furnaces, there are two completely automatic, flame-hardening machines (illustrated above) — the last word in modern equipment. The split-second, precision control of these machines permits selective hardening — giving each gear the same consistent hardness, strength, and ruggedness. Heat-treated gears and shafts are another example of the "quality extras" that are yours when you choose UNIT — the undisputed leader in producing the most efficient and economical cranes and shovels in the industry.

This is the 9th of a series of 10 ads describing outstanding UNIT features.

UNIT CRANE & SHOVEL CORP., 4119 W. Burnham St., Milwaukee 14, Wis., U.S.A.

Crawler and Mobile models — ½ and ¾ Yd. Excavators. Cranes up to 20 tons capacity.

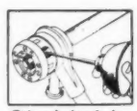
SHOVELS • DRAGLINES • CLAMSHELLS • CRANES • TRENCHOES • MAGNETS

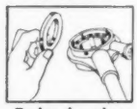
A DELUXE TOOL with enclosed ratchet — for safety

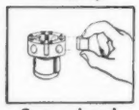
BEAVER NO. 3

THREADS PIPE 1/8 TO 1 INCH
THREADS BOLTS 1/4 TO 1 INCH

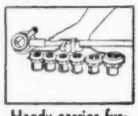
● A world-wide favorite for 40 years. Ratchet teeth fully enclosed —for safety. Openings between dies for easy oiling and chip clearance. Dies square in shape—no weak sections. Can be inverted for close threading. Made right or left-hand. Dies available for conduit and brass tubing. Die head carrier. free. Metal case available, extra. Write for new catalog.


Oil and chip holes between dies.


Enclosed ratchet for safety.


Square shaped dies, no weak section.

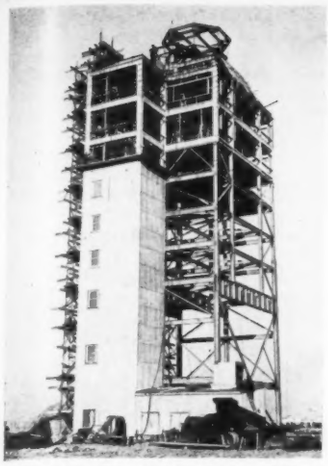
Bolt dies available.


Handy carrier furnished free.

BEAVER PIPE TOOLS

258-300 DANA AVENUE, WARREN, OHIO, U. S. A.

"Over 50 Years of Friendly Service"



The Idlewild control tower under construction. Corrugated-asbestos siding has been steel-welded into place on the lower portion. The upper portion was later enclosed.

Control-Tower Siding Welded, Time Saved

When the new 150-foot-high control tower at New York International Airport (Idlewild) was under construction, a work-schedule question arose as to the placing of about 16,000 square feet of corrugated-asbestos siding. From the seventh floor upward the structure is completely enclosed and contains offices and control apparatus. The only enclosed portion of the lower seven floors is the stairwell and elevator shaft, which includes provision for all service facilities.

The general contractor, Wortman & Sons, Inc., had set a work schedule whereby a four-man crew, supplied by the L. P. Kent Co., could place the siding on the service enclosure without interruption. Two crews were also to install the siding on the completely enclosed portion above the seventh floor. In order to make this schedule workable, Kent suggested that the general contractor request a specification change from The Port of New York Authority. The original plan for fastening the siding in place with steel nuts and bolts was abandoned and the contractor used the Nelweld methods developed by Nelson Stud Welding Division, Gregory Industries, Inc., Lorain, Ohio.

With this method, crews installed fasteners entirely from the outside of the structure by means of the Nelson stud-welding gun. Through holes drilled in the corrugated sheets, they end-welded Nelson threaded studs to the steel structural members. Fused to the steel, the studs became an integral part of the structure. Zinc-alloy collar nuts, run down on the cadmium-plated studs, secure the corrugated sheets on control tower, and in the corrosive salt atmosphere at Idlewild they are expected to have a long life.

The new control tower replaces the temporary tower on top of the temporary administration building, and will eventually be incorporated into the proposed permanent terminal building.

Fast-Setting Patcher

A floor-patching material which can be used indoors or out, just as it comes from the container, is announced by Permamix Corp., 228 N. LaSalle St., Chicago 1, Ill. Permamix will not freeze, it can be stored indefinitely and used in any temperature, and there is nothing to add or mix, the company claims. It sets fast, allowing traffic to be resumed quickly. It comes in durable drums of 50-pound net weight.

The hole to be patched is first cleaned and then spread with primer supplied in a drum. Permamix is filled in, tamped solidly, and dusted with cement or floor dust. Feather edges are said to eliminate cutting or chipping.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 753.

New Asphaltic-Type Sewer-Joint Packing

A sewer-joint packing used with bituminous joint-sealing compounds has been introduced by Presstite Engineering Co., 3900 Chouteau Ave., St. Louis 10, Mo. Ropax consists of a processed fibrous core, completely impregnated and saturated with a blend of selected asphalts containing an inhibitor to prevent bacteria and fungus growth.

When properly caulked, it is said to compress and conform in a compact mass to the shape of the bell, forcing the asphalt saturant into the pores of the pipe. The saturant is adhesive and has low susceptibility to temperature change.

The joint is made in three steps. At least one day before the pipe is laid, the bell and spigot ends are cleaned and treated with a special asphaltic primer. Placing and caulking the joint with Ropax is the second step. The jointing is then completed by applying waterproof Kalkite, an internal-setting cold-applied asphaltic cement.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 745.

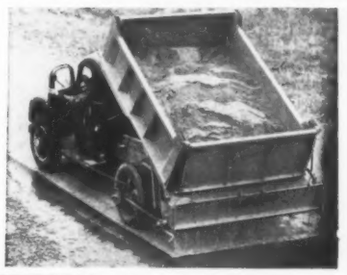
Atlas Chain Cleveland Mgr.

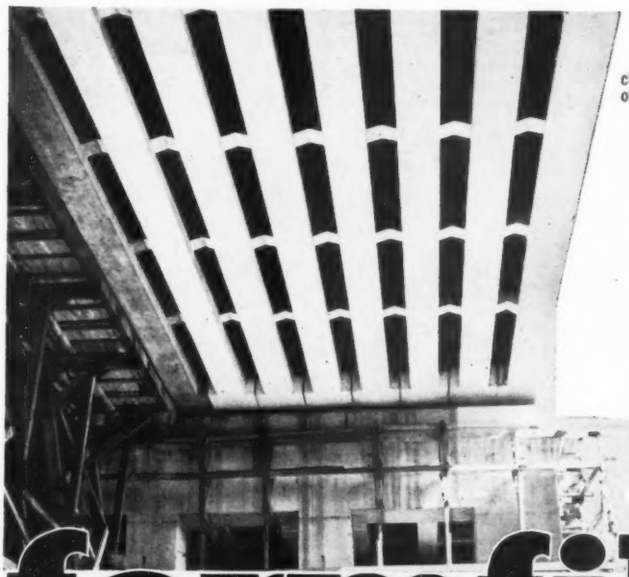
Frank Ingham has recently taken over the post of Cleveland Manager of Atlas Chain & Mfg. Co., Philadelphia, Pa., manufacturer of roller chains and allied equipment. Mr. Ingham, who has more than 30 years' experience in the industry, was a sales representative in Cleveland for Atlas Chain for several years prior to his new appointment.

Do your sealcoating and ice control jobs the fast easy Swenson way. Spreads salt, chloride, sand or cinders any width or amount desired.

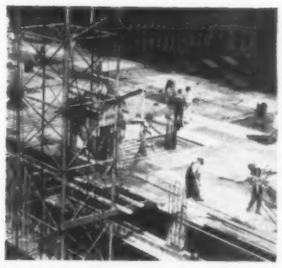
Free Information

Swenson Spreader & Mfg. Co.
Lindenwood, Illinois





clean, smooth beams and piers of pre-stressed concrete



smooth concrete industrial building surfaces

to produce a clean, smooth concrete finish use

formfilm

THE PROTECTIVE COATING FOR PLYWOOD FORMS

freedom from staining on apartment project

All over America contractors report that Formfilm is the practical and economical answer for the protective coating of valuable plywood forms. Since it is easily applied and reapplied on the job, Formfilm has many advantages over any other protective finish for concrete forms.
Heavy scratches for instance, can be quickly recoated when Formfilm is used at the job.
Formfilm is now being widely used in "tilt-up" construction.

ADVANTAGES OF FORMFILM

Increases speed of form handling
Increases use of forms without recoating
Increases life of forms—no grain raising
Eliminates all disadvantages of oil or oil deposits on concrete
Cleaner, smoother surfaces at minimum rubbing cost.

HORN

A. C. HORN COMPANY, Inc. est. 1897

Manufacturers of materials for building maintenance and construction
LONG ISLAND CITY 1, N. Y. • Los Angeles • San Francisco • Houston
Chicago • Toronto SUBSIDIARY OF SUN CHEMICAL CORP.

A. C. HORN COMPANY, INC.,
Long Island City 1, N. Y.
Please send me ☐ complete data on FORMFILM
☐ free copy of your 96-page Construction Data Handbook

CEM-2

NAME_____TITLE_____
FIRM NAME_____
ADDRESS_____
CITY_____STATE_____

For heavy-duty service — the FA-181 sensitive altimeter, shock-mounted and aluminum-cased.

Sensitive Altimeter

A new sensitive altimeter for heavy-duty service is announced by Wallace & Tiernan Products, Inc., One Main St., Belleville 9, N. J. The FA-181 has an aluminum case and a latched metal lid. A desiccant absorbs moisture. The mechanism is mounted on sponge-rubber supports which absorb shock. A shoulder strap is attached to the case and a conversion chart and sling psychrometer are mounted in the lid. When the two-base method is used, a W&T Palmer Altirule is employed to compute elevations directly from observations.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 718.

Circular on Truck Series

A circular on the Cook M Series short-wheelbase single passenger trucks is issued by Cook Bros. Equipment Co., 1815 N. Broadway, Los Angeles 31, Calif. Made for dump bodies, crane mounts, and concrete mixers, the trucks are designed for easy service and maintenance.

The M-310 3-axle truck with 6-yard mixer has a 163-inch wheelbase. The M-36 has two axles, a 145-inch wheelbase, and mounts a 4-yard mixer.

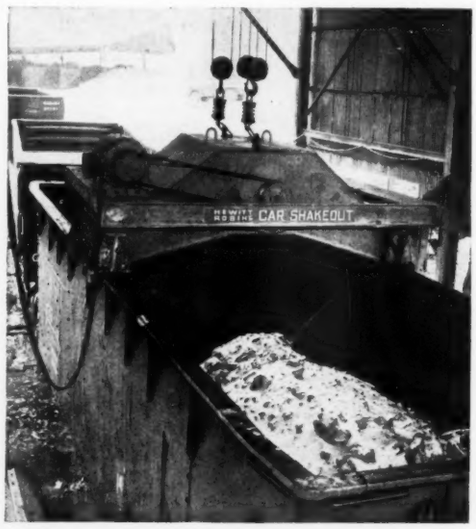
This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 850.

A-C Division Expands

A $15,000,000 expansion plan for Allis-Chalmers Mfg. Co.'s Tractor Division, Springfield, Ill., will get under way this summer. The addition, located east of the main building of Plant No. 1 in Springfield, comprises more than 300,000 square feet of manufacturing floor space, together with the necessary machine tools for increased production of crawler tractors, motor graders, and repair parts.

This is the third expansion since 1944, when a $10,000,000 program was initiated and completed after the war. A second modernizing, remodeling project was completed in 1951 at a cost of $3,500,000.

HEWITT-ROBINS



Unloads HOPPER CARS Faster . . . Cleaner

Hewitt-Robins Car Shakeout Really Shakes OUT The Car

Saves Time: Unloads 70-ton hopper cars "*broom clean*" in as little as 90 seconds . . . even when loaded with hard-packed material.

Saves Manpower: Everything under "finger-tip" control except opening the hopper doors. Two men —or even one—can handle entire operation.

Saves Money: Less car damage—no need for demurrage.

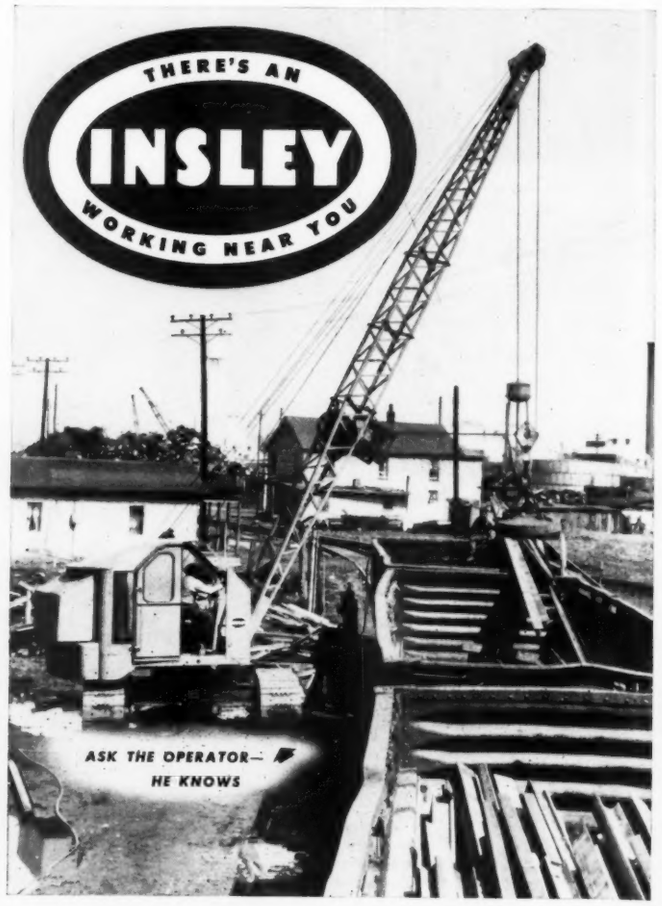
Here's Proof: Operators say . . . "It is in operation 24 hours a day unloading ⅜" x 0" coal and *saving us $70.00 a day* since first put into operation in 1946" . . . "It has *reduced our unloading time* from 100 man-hours to 18 man-hours per day" . . . "*Pays for itself* every 105 days by merely eliminating damage to railroad cars."

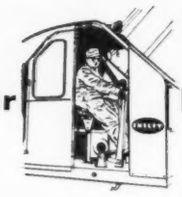
Two Types: The HD Car Shakeout for continuous, high-speed car unloading—the GS Car Shakeout for operators who unload 15 or less cars per day.

Get The Facts . . . for the HD Car Shakeout, write for Bulletin No. 128-A—for the GS Car Shakeout, write for Bulletin No. 130.

HEWITT-ROBINS HR INCORPORATED

STAMFORD, CONNECTICUT



The INSLEY operator  knows..

PROJECT RATED INSLEY BY THE USER—FOR THE USER

that Insley Equipment can be rated-for-the-project . . . he knows that specification alternates make it possible to buy the exact equipment to do his job best.

INSLEY MANUFACTURING CORPORATION • INDIANAPOLIS 6, INDIANA

Yours for the Asking

An extra set of tear sheets of any CONTRACTORS AND ENGINEERS MONTHLY article you may wish to file for future reference.

Our Reader Service Dept. will send such articles pasted on standard file size sheets if you request it.

Trends in Concrete Analyzed by the ACI

Current Practice in the Field of Design and Construction Discussed at 48th Annual Meeting

• OVER 650 contractors, engineers, and materials producers converged on Cincinnati, Ohio, February 25-28, for the 48th Annual Meeting of the American Concrete Institute to review and analyze the latest developments in the field — prestressing, electric heating, vacuum processing, the use of lightweight aggregates, and design by ultimate-load theories.

Harry F. Thomson, Manager, Redi-Mix Concrete Division, Materials Service Corp., Chicago, Ill., in his address as retiring President of the Institute, referred to concrete as liquid stone. Many speakers at the technical and general sessions bore out his analogy, revealing the extent to which man has been able to adapt concrete to suit his own needs, until it forms a structure far superior in many respects to stone itself.

Those attending the 3-day meeting had a full program. Early-morning and evening periods were devoted to the work of technical committees. Papers at the general daytime sessions were across-the-board—design, construction, material production, and research.

Prestressed Concrete

While members of the Technical Committee on Prestressed Reinforced Concrete worked during the first morning session on the standardization of notations and definitions, and on a code of recommended practice, other ACI members attended a general meeting and listened to two papers about prestressed concrete. One paper, authored by G. C. Ernst, C. O. Brunken, and A. R. Riveland, of the University of Nebraska's Civil Engineering Department, summarized a cost study of conventional and prestressed-reinforced-concrete reservoirs. Basing their report on the investigation of 260 reservoir designs, they concluded that prestressed concrete had a lower first cost when its unit price in place was anything less than twice the unit price of a conventional design. The lower cost was the result of savings in the quantities of materials—40 to 60 per cent of the reinforcing steel and up to 35 per cent of concrete—an inherent benefit of prestressed design. The authors also compared the first costs of above and below-ground reservoirs where site locations were unrestricted and controlling water elevations identical. Those above ground, they said, had a lower first cost for capacities less than 2,500,000 gallons. Above this size the underground reservoir was competitive in cost.

Clair L. Johnson, Johnson & Anderson, Engineers, Pontiac, Mich., looked at prestressing from the construction angle in his report on the building of the John R. Road Bridge in Royal Oak, Mich. He discussed problems in the manufacture of the precast blocks which make up the bridge beams, the necessary field modifications in assembling the blocks, and the technique of prestressing and erecting the beams.

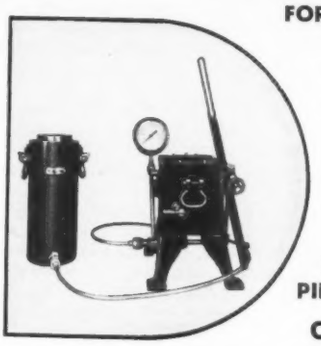
Durability of Concrete

First topic at the Tuesday afternoon session was the durability of concrete.

(Continued on next page)

DUDGEON HYDRAULIC **JACKS**

FOR DEPENDABLE PERFORMANCE



"JACK" in any direction . . . . PUMP in only one

Needle release valve for pin point "lowering"

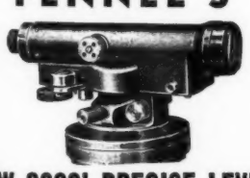
FOR: PILE TESTING
UNDERPINNING — BRIDGE
PIPE PUSHING — SOIL TESTING

CAPACITIES TO 600 TONS

WRITE FOR CATALOGS — ASK ABOUT OUR RENTAL SERVICE
OTHER PRODUCTS: Hydrostatic Test Pumps • Single and double acting Tension Jacks • Wire Stressing Jacks . . .

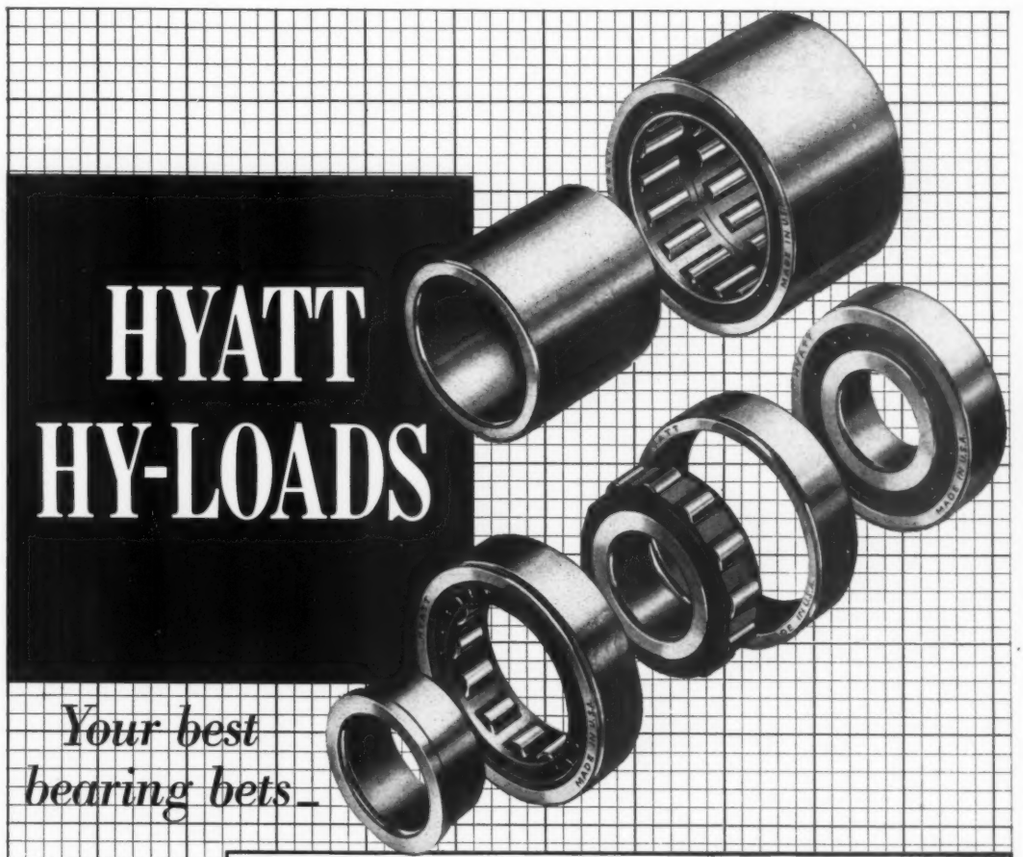
RICHARD DUDGEON, INC. 789 BERGEN STREET
ESTABLISHED 1850 BROOKLYN, NEW YORK

FENNEL'S



NEW 3280' PRECISE LEVEL
ERECTING EYEPIECE — FULL CIRCLE LEVELING BY TILTING SCREW
SEND YOUR TRANSITS & LEVELS TO US FOR REPAIRS
LOWEST PRICES • 3 DAYS' SERVICE
NORBERT DIENSTFREY, U. S. Agent
478 Water Street New York 2, N.Y.

HYATT HY-LOADS



Your best bearing bets

THE Hyatt Hy-Load line of cylindrical roller bearings is designed to take heavy radial loads in the most direct manner. They also permit light or intermittent thrust loads.

These roller bearings are available with separable inner races, separable outer races or in non-separable types, depending upon design and assembly requirements. For additional capacity, two rows of rollers can be provided in the separable inner-race type.

Hyatt Hy-Load Roller Bearings are manufactured in ten basic types—two diameter series—wide and narrow widths, and they conform to standard boundary dimensions.

* * *

Like other popular series of Hyatt Roller Bearings, they are engineered right, built right, and they stay right, permitting equipment manufacturers greater design flexibility and general product improvement, and guaranteeing for ultimate users the longer machine life and the improved performance that inevitably results from correct bearing application at all critical wear points. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey.

HYATT ROLLER BEARINGS

Trends in Concrete Analyzed by the ACI

(Continued from preceding page)

Many of the speakers outlined design and construction practices which now contribute to early deterioration of concrete, and methods of overcoming it.

C. B. Porter, of the Chesapeake & Ohio Railroad, and R. W. Gilmore, of the Baltimore & Ohio, described programs undertaken by the American Railway Engineering Association to determine the properties of concrete that would reduce the substantially high costs of maintaining railroad structures. Too much water in the mix, deleterious aggregates, seepage from embankments, and volume changes due to shrinkage were the prime factors contributing to the early demise of concrete, they said. Specific corrective measures are still under study, but the answer seems to lie in the elimination of these conditions and in a wider use of air-entrained concrete for railroad structures. Mr. Porter sounded a note of warning with regard to "waterproof" paints. AREA tests demonstrated great variance in the effectiveness of the many products on the market, some painted specimens absorbing as much water in immersion tests as unpainted control beams. The buyer had better subject products with which he is not familiar to control tests, he said.

F. H. Jackson, Physical Research Engineer, Bureau of Public Roads, also offered praise for air-entrained concrete. Air-entrained specimens show remarkable qualities in freeze-thaw tests compared to nonentrained mixes, he said. It is his opinion that with air-entrained concrete the designer can ignore the water-cement ratio insofar as its effect on durability is concerned—that is, cement which must be designed for strength. However, good cement, durable well graded aggregate, and other factors which contribute to the durability of concrete cannot be ignored, he said. Although air entrainment offsets to some degree the harmful action of raw salts and chlorides used in freeing pavements of snow and ice, it is by no means a final answer to the problem of scaling. Mr. Jackson suggested using an air content of approximately 5 per cent where the maximum aggregate size is ¾ inch or greater, 6 per cent when it is less than ¾ inch; he suggested raising both figures by 2 per cent when the use of raw salts on the pavement is anticipated.

Lewis H. Tuthill, of the Bureau of Reclamation, Denver, Colo., and Byram W. Steele, Consulting Engineer, Miami, Fla., reported on problems of durability that are peculiar to hydraulic structures. Remarking that durability is a relative term, one that must be evaluated in terms of the over-all conditions, they outlined some of the special difficulties in their field—principally, of course, the wetting of the concrete surface and/or saturation of the interior of concrete structures. Present practice, said Mr. Tuthill, uses air entrainment to protect the concrete from the harmful effects of alternate freezing and thawing; Type V cements to offset attack by sulfates; and low-alkali cement or opaline pozzolan to reduce expansion due to alkali-aggregate reactions. But there are other actions to be taken, he said, to improve the durability of hydraulic structures: insure good drainage in large concrete areas, provide good cover for concrete pressure lines, have well made construction joints (with thorough cleanup before the succeeding pour); align surfaces smoothly to prevent cavitation; and control temperature differentials in mass concrete.

Methods of Curing

ACI members devoted the remaining portion of the afternoon session to reports on the methods currently used to cure concrete. In his lead-off paper, A. G. Times, of the BPR, covered the fundamental principles of curing. Other speakers outlined specific recommended practices for curing pavements, structural members, mass concrete, and canal linings.

Construction Practices

K. P. Billner, President of Vacuum Concrete Corp., Philadelphia, Pa., was the first speaker of a program on new and recent practices in the field of concrete construction. He offered a fascinating illustrated description of work performed in foreign countries using the vacuum process.

Many of the advances in this field are startling. In Italy, for example, they have constructed 16-foot lengths of 10-foot-diameter pipe with forms that may be re-used 12 to 16 times *in one day*. After the 4½-inch concrete pipe wall has been prestressed, it will withstand a 400-foot head of water. Equally interesting are 5 x 2-foot wall slabs for

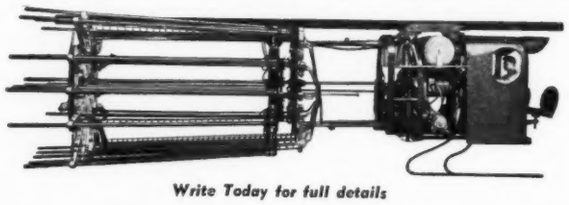
(Continued on next page)

INCREASE TUNNEL-DRIVING SPEEDS 80% and REDUCE LABOR COSTS 92% with

DEMO-CANON AUTOMATIC GANG DRILL

- Drilling Speeds of 7" to 36" per minute.
- Self Contained Power Plant.
- 28 Fully Automatic Electric Hammer Drills.
- Drills May Be Moved in Vertical or Horizontal Direction.
- Drill Speed Adjustable from 300 to 3,000 RPM.
- Push Button Type Controls on one operating Panel.

TWO MEN OPERATE 28 DRILLS



Write Today for full details

DEMO-CANON ENGINEERING AND MANUFACTURING CO., INC.
2215 S. Sepulveda Blvd., Los Angeles 25, Calif.

IMMEDIATE DELIVERY!

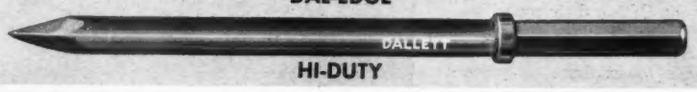
PNEUMATIC DALLETT EQUIPMENT ACCESSORIES

CONTRACTOR'S STEELS

You can replenish your stock of contractor's steels *immediately* by simply using this advertisement as an order blank. Check your requirements, sign your name, and send it to the nearest Cleco office listed below.

DEALERS Write for information on special dealer's discounts.

DAL-EDGE



HI-DUTY

Gentlemen: Date_____

Please ship items checked below.

☐ Charge to our account. ☐ Send C.O.D. ☐ Check enclosed.

Check Quantity Desired Here:	Code No.	Size Shank	Size Stock	Length	Price Each
		DAL-EDGE			
	829093	1⅛" hex x 6"	1¼" dia.	16"	$5.00
	829094	1¼" hex x 6"	1⅜" dia.	16"	5.50
		HI-DUTY			
	829068	1⅛" hex x 6"	1¼" dia.	14"	3.55
	829069	1⅛" hex x 6"	1¼" dia.	18"	4.10
	829070	1⅛" hex x 6"	1¼" dia.	24"	4.90
	829071	1¼" hex x 6"	1⅜" dia.	14"	4.20
	829072	1¼" hex x 6"	1⅜" dia.	18"	4.90
	829073	1¼" hex x 6"	1⅜" dia.	24"	5.95

TERMS: 30 Days Net, F.O.B. Houston, Texas. Freight prepaid on 1000 lbs.

COMPANY NAME ADDRESS SIGNATURE AND TITLE

ASK FOR OUR BULLETIN FT-5012, SHOWING COMPLETE LINE OF MOIL POINTS, ASPHALT CUTTERS AND OTHER STEELS FOR CONTRACTOR'S USE.

CLECO AIR TOOLS

CLECO DIVISION

of the REED ROLLER BIT COMPANY, 5125 Clinton Drive, Houston 20, Texas, U.S.A.

DIVISION OFFICES

GEORGIA: Atlanta 3, 502 Peters Bldg. • ILLINOIS: Chicago, 5701 West Madison St. • MASSACHUSETTS: Worcester, 23 Enfield St.
MICHIGAN: Detroit, 2832 East Grand Blvd. • MISSOURI: St. Louis 3, 2322 Locust St. • NEW JERSEY: Newark 4, 75 Lock St.
OHIO: Cincinnati 2, 729 Temple Bar Bldg. • PENNSYLVANIA: Philadelphia 20, 5220 North Fifth St. . . . Pittsburgh 17, 5626 Phillips Ave.
TEXAS: Fort Worth, 1717 East Presidio • CALIFORNIA: Los Angeles, 1317 Esperanza St. • MARYLAND: Baltimore 20, 39D Oak Grove Dr.

In Canada: Cleco Pneumatic Tool Company of Canada, Ltd., 927 Millwood Road, Toronto (Leaside), Ontario
DISTRIBUTORS IN PRINCIPAL CITIES OF THE UNITED STATES AND THOUGHOUT THE WORLD

3431

Italian electric stations. Here they utilize the 9,000-pound concrete attainable with the vacuum method to make a 1¼-inch wall, using only light wire-net reinforcing.

In South Africa contractors cast all sections for a 200,000-gallon reservoir in 8 days, using one set of side forms, and then were able to erect the entire tank in one day. Mr. Billner also described the rapid low-cost construction of irrigation flumes in Spain, multistory apartments in Egypt, small homes and buildings in Belgium and in Colombia, South America. In France contractors have made good use of the vacuum lifter in processing and transporting concrete revetment mats. A new improved lifter, aptly called the Octopus, will automatically grasp 20 individual mats, each 1 x 4 feet, lift them from the casting bed, move them to the storage area, and stack them in piles, in about a minute and a half.

Chuzo Itakura, Professor at Hakkaido University, Sapporo, Japan, gave his American audience food for thought with a detailed description of cold-weather concrete curing by the use of electrically heated rods placed on the surface or imbedded in the concrete. The cost is about 10 per cent of the total cost of the pour, he said.

C. O. Christenson, of the National Association of Home Builders, Washington, D. C., highlighted recent concrete-construction trends on small jobs. His series of color slides showed the step-by-step construction of multiple-unit homes by the "tilt-up" method. Here, he said, are definite cost benefits, particularly in the reduction of formwork. Horizontal casting of the wall sections—with window frames, door frames, etc., cast in place—eliminates all usual forms and greatly reduces labor costs.

The Bureau of Reclamation has come up with some new construction practices on winter concrete placing. A paper by Tuthill, Glover, Spencer, and Bierce reported that freshly placed concrete with 1 per cent calcium chloride in the mix will be fully protected from freezing if kept above 50 degrees F for 3 days, and above 32 degrees for 3 additional days. Former spex were 11 days for the latter. Since considerable heat is generated inside the concrete during the first 3 days, insulation alone can keep the concrete above these limits, they said. That means a big saving in enclosures, heating equipment, fuel, etc., previously necessary. The authors gave complete data on field applications, tests of various insulations, and resultant concrete temperatures.

Ultimate-Load Design

A series of six papers introduced many of the ACI members to the theory and practice of ultimate-load design. Proponents of the method cited the following advantages. It provides a common rational basis for the design of *all* members; it makes the safety factor for all shapes the same; and it establishes new load factors such that the safety factor varies with the type of load on the member and the type of structure which is being used. Further, it will enable designers to determine the capacity of prestressed members, to predict the performance of structures subject to long-time impulse loading, and to use a simplified design procedure throughout. The method also prevents uneconomical use of compressive reinforcement, they said.

Other papers on design covered the economy of beams (determination of the cross section that is most economical for a given span and loading), recent developments in reinforcing steel, and a new numerical procedure for the analysis of single-span skewed rigid frames and arches subjected to loads or deformations in any direction.

Lightweight Aggregates

J. A. Murlin, of George L. Dahl, Architects and Engineers, and Cedric Willson, of Texas Industries, both of Dallas, Texas, provided data on one of the newest and most interesting subjects in the field of concrete—the use of lightweight aggregates for structural concrete. Texas alone, they told the group, is turning out 50,000 cubic yards of expanded clay and shale for lightweight concretes. Though the major portion goes into block manufacture, precast floor and roof panels, and roof fill, an increasing percentage is now being used for monolithic structural concrete.

The features of these new materials bear repeating. Expanded clays and shales will produce concrete that develops satisfactory compressive strengths without excessive use of cement; is lighter in weight by one-third or more; provides better resistance to fire and weathering; develops strength in bend, shear, and diagonal tension within code requirements; and provides a significant insulation value.

Is it tough to design, mix, and place this type of concrete? Not at all, said the authors. The elastic modulus of this concrete *will vary* 50 to 90 per cent from that of sand-gravel concretes, but the variation has little effect on design calculation, according to Murlin and Willson. They proved this to their audience with examples. Though mixing has been a problem, they said, it needn't be. Lightweight concrete can be produced by ready-mix plants or by contractors as easily as regular concrete—with slight modifications in accepted methods. By basing batch proportions on the dry weight of the aggregates, the plant producer can mix the concrete with the same equipment, in the same amount of time, and produce a uniformly high-quality product. Truck operators like the lightweight batches which are easier on them and on their equipment. Cross-town trips are faster, too, they say.

Messrs. Murlin and Willson also reported high praise for lightweight concrete by contractors' puddling and screeding crews. Greater mobility, reduced bleeding, and easier cleanup are factors in its favor. The authors also pointed to worthwhile savings in form costs due to the one-third reduction in mix weight. The authors of the paper

(Continued on next page)

the Power Graders THAT HAVE EVERYTHING

8 Important Features Never Before Combined in a Motor Grader

30 minutes of action, in 16 mm. color and sound, demonstrating the performance of Austin-Western Power Graders and Attachments on a wide variety of jobs. Your nearby A-W distributor will be glad to schedule a print for your use.

All-Wheel Drive with its tremendous climbing power in the front drivers.

All-Wheel Steer which makes the grader twice as maneuverable

Controlled Traction which moves more material farther and faster.

Precision Sideshift which keeps the blade under perfect control.

High-Lift Blade for accurate work on any degree of slope.

Extreme Blade Reach which comes in handy on the majority of jobs.

Completely Reversible Blade for those rare occasions when it is necessary.

Full Hydraulic Control with its instant, fingertip action.

AUSTIN-WESTERN COMPANY · Subsidiary of Baldwin-Lima-Hamilton Corporation · AURORA, ILLINOIS, U.S.A.

Austin Western

SINCE 1859—BUILDERS OF CONSTRUCTION EQUIPMENT

Trends in Concrete Analyzed by the ACI

(Continued from preceding page)

concluded that lightweight concretes of this type are practical, economical, and fully competitive with standard concrete on many jobs throughout the country.

Other Concrete Materials

Papers given during the Wednesday morning session covered the authors' experience with other concrete materials. Edwin J. Callan, Waterways Experiment Station, Jackson, Miss., described methods for determining rapidly the thermal coefficients of fine and coarse aggregate, and the use of this type of data to develop durability factors for various aggregate combinations. He recommended that thermal effects be considered in choosing aggregates for durable concrete.

Delmar Bloem, Stanton Walker, and W. G. Mullen, of the National Sand & Gravel Association, Washington, D. C., described tests of the effects of temperature changes on concrete, as influenced by aggregates. They concluded that thermal expansion of concrete and mortar containing different aggregates varied approximately in proportion to the thermal coefficient and quantity of aggregate in the mixture. J. J. Shideler, Bureau of Reclamation, Denver, Colo., summarized the effect of calcium chloride on the properties of concrete. He also reported the results of recent Bureau tests.

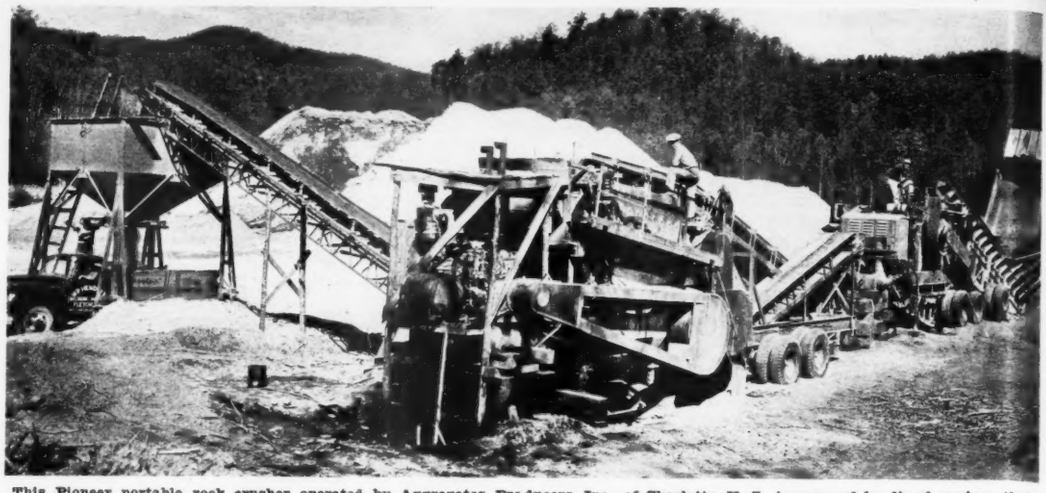
C. H. Scholer and G. M. Smith, Kansas State College, Manhattan, Kans., added new data on the use of fly ash in concrete. A 20 to 30 per cent replacement of cement by fly ash effectively inhibits cement-aggregate reaction in the concrete, they said. It also imparts better workability and enables easier finishing.

New Officers, Awards

A. T. Goldbeck, Engineering Director, National Crushed Stone Association, Washington, D. C., was elected President of the American Concrete Institute at its 48th Annual Convention. He succeeds Harry F. Thomson, Manager, Redi-Mix Concrete Division, Material Service Corp., Chicago, Ill.

C. H. Scholer, Professor and Head of the Department of Applied Mechanics, Kansas State College, Manhattan,

(Concluded on next page)



This Pioneer portable rock crusher operated by Aggregates Producers, Inc., of Charlotte, N. C., is powered by diesel engines that do not have to be removed when the rig is transferred to a new location. This saves $300 and 2 days per move, according to the company's plant manager. The primary unit of the rig is a 24 x 26 Pioneer 151 PLR jaw crusher powered by a 6-cylinder GM diesel. The secondary is a Pioneer 40-inch triple roll crusher powered by a GM Twin-6 diesel.

Our WELLPOINT SYSTEMS
let you "work dry"
—at lower cost!

FREE* HANDBOOK

Send today

GRIFFIN WELLPOINT CORP.
881 East 141st St. New York 54, N. Y.
Please send me, without obligation, my copy of THE WELLPOINT SYSTEM.
Name.....
Title.....
Firm.....
Address.....

*Clip this coupon to your letterhead. FREE to Engineers and Contractors, only. Regular price to all others, $1.50.

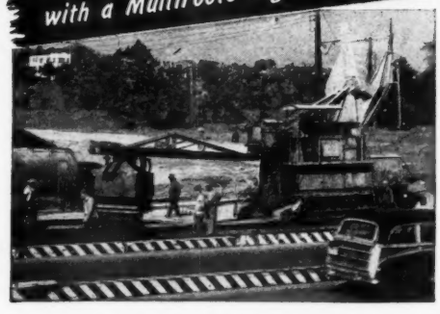
LOOK at the picture above—one machine that can place itself in any location—no expense for purchase or operation of a hoisting mechanism—no extra cost for truck equipment—minimum operating crew! Here is pouring at low cost.

MultiFoote brings you the greatest combination for mixing and pouring concrete you can find anywhere. One unit with the MultiFoote HighLift Boom permits you to mix and pour three stories up and then by simply lowering the boom or with a simple change in booms where extra long HighLift Booms have been used, you are equipped for pouring slab at a speed that has seldom been equalled.

MultiFoote Pavers have established records for pouring slab at the rate of a mile a day. With the MultiFoote you are ready to bid on a wide range of contracts and three sizes of MultiFoote Pavers from a 27-E Single Drum to the big 34-E DuoMix care for practically any capacity problem. Ask for details.

THE FOOTE COMPANY, INC.
Subsidiary of Blaw-Knox Co.
1916 State Street Nunda, New York

FREE YOUR CRANE for other Work with a MultiFoote HighLift Boom



MultiFoote 34-E DuoMix getting out 50 batches an hour even with difficult traffic conditions impeding trucks.

MULTIFOOTE PAVER
FOR EVERY PLACE CONCRETE MUST BE POURED

A BLAW-KNOX PRODUCT

Kans., was elected for a two-year term as Vice President of the Institute.

Henry L. Kennedy, Manager of the Cement Division, Dewey & Almy Chemical Co., Cambridge, Mass., elected for a two-year term as Vice President in 1951, continues in that office.

Elected to three-year terms on the Board of Direction were A. Allan Bates, Vice President of Research and Development, Portland Cement Association, Chicago; J. W. Kelly, Civil Engineering Department, University of California, Berkeley, Calif.; F. N. Menefee, Professor of Engineering Materials, University of Michigan, Ann Arbor, Mich.; and Bailey Tremper, Materials and Research Engineer, Washington State Highway Department, Olympia, Wash.

The Board of Direction named Fred F. Van Atta acting Secretary-Treasurer succeeding Harvey Whipple, Secretary of the ACI since 1919 and Treasurer since 1921. To take advantage of Mr. Whipple's many years' experience, the Institute is retaining him as a consultant in editorial matters.

Raymond E. Davis, Professor of Civil Engineering and Director, Engineering Materials Laboratory, University of California, Berkeley, Calif., received the Henry C. Turner Medal awarded by the Institute for notable achievement or service to the concrete industry.

Douglas E. Parsons, Chief, Building Technology Division, National Bureau of Standards, Washington, D. C., was the choice for the Alfred E. Lindau Award given for outstanding contributions to reinforced-concrete design practice.

Otto Safir, Safir Engineering Consultants, Ltd., Vancouver, B. C., Canada, received the American Concrete Institute Construction Practice Award. ACI established this award to recognize the man on the job for his resourcefulness in translating design into a completed structure. W. J. McCoy and A. G. Caldwell, Director of Research and Research Chemical Engineer, respectively, Lehigh Portland Cement Co., Coplay, Pa., received the Wason Medal for "noteworthy research" reported in the *ACI Journal* in the past year.

W. H. Price, Engineering Laboratories, U. S. Bureau of Reclamation, Denver, Colo., was also recipient of the Wason Medal for "the most meritorious paper" reported in the *Journal* during 1951.

Portable Hand Lamp

A sealed-beam portable electric hand lamp is announced by U-C Light Mfg. Co., 1050 W. Hubbard St., Chicago 22, Ill. The outstanding feature of the Model No. 166 is its hermetically sealed beam bulb that keeps dirt and moisture from the mirrored surface of the reflector and gives brilliant prefocused light.

The latest addition to the Big Beam line is powered by one standard 6-volt lantern battery and its lamp-to-battery pressure-type contacts permit battery replacement in seconds. Its 4-inch lamphead and handle are chrome-finished. The battery case has a hinged cover, is made of 20-gage steel, is weatherproof and rustproof, and is finished in red baked enamel.

The switch is conveniently mounted on the lamphead. The head is adjustable within 95 degrees in a vertical plane. The complete unit weighs 55 ounces.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 810.

A hermetically sealed beam bulb is a feature of the Model 166 electric hand lamp made by the U-C Light Mfg. Co.

High-Grade Grease

A grease for general use has been introduced by The Texas Co., 135 E. 42nd St., New York, N. Y. The company points out that Multifak 2 has excellent shear stability and resistance against water washing, and that it can be pumped at low temperatures. It is said to be suitable for bearing lubrication over a wide range of temperatures.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 701.

SOLVE YOUR HAULING PROBLEMS WITH A "TRANSPORT TRAILER"

Capacities through 75 Ton—Semi and Full Trailers

CARGO CARRIER MODEL GPX (Semi) with Tandem Axles

PATENTED TANDEM AXLE ASSEMBLY—Featuring unusual lengthwise and sidewise wheel accommodation to irregularities in the road. Use of full width tubular forged, heat treated axles with CAMBER.

FRAME—Constructed of beam sections throughout, electric welded. A ruggedly strong and efficient unit with minimum weight.

TRANSPORT TRAILERS, INC.
TRANSPORTATION ENGINEERING A SPECIALTY
CEDAR RAPIDS, IOWA, U.S.A.

What's U. S. Rubber doing to handle the rise and fall of Mississippi water?

Water supply for an industrial plant (3900 gallons per minute) is pumped through this system 24 hours a day. The system conveys the water from a pontoon pumping station to the lines shown here.

The U. S. Water Discharge Hose connect the pontoon intake and the pumping station to the water lines.

No longer does the 16-foot rise and fall in the lower Mississippi sever the water-supply lines of an industrial plant. United States Rubber Company engineers installed special Water Discharge Hose which act as "hinges" as the water rises and falls.

"U.S." makes hose of every nature and type. Moreover, "U. S." engineers will design special types for you. Very often they have solved problems quickly and economically by means of hose, where hose had never been used before. For more information, write to address below.

PRODUCT OF U.S.RUBBER SERVING THROUGH SCIENCE

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION • ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Waterbound Macadam On a Road Relocation

Eight-Inch Stone Base Laid on 9-Inch Gravel Blanket Course, Then Topped With 5 Inches of Asphaltic Concrete

• ONE of the major highway improvements started in Ohio last season was the relocation of a 4.1-mile section of U. S. 33 immediately west of Dublin in Franklin County. The existing macadam pavement, while still in good condition, had so many sharp and dangerous curves that its accident rating was high. Accordingly the road is being relocated to eliminate these hazardous curves. The new alignment leaves the old just beyond Dublin, and continues westward on a right-of-way lying south of the existing highway. The latter is joined again at the western end of the improvement.

Like the existing highway, the new one also has a waterbound-macadam base. It consists of a single 8-inch macadam course laid on a 9-inch gravel blanket put down in two lifts. The macadam base is covered with 5 inches of asphaltic concrete, machine-laid in three courses with the top width 24 feet.

Construction got under way during the latter part of February, 1951, after the Ohio State Department of Highways awarded a contract for the work to R. J. Dienst & Son of Columbus, Ohio, at a total bid price of $478,999.60. The job will be finished this spring.

Macadam Pavements, Inc., Photo.

An Apsco elevating spreader lays limestone to a loose depth of 11 inches for the waterbound-macadam base course on U. S. 33.

Grading

Some 68,959 cubic yards of earthwork have been involved in the contract, with 35,905 yards in the estimated roadway excavation and 33,054 yards of borrow required. Cuts and fills are shallow, with most of the roadway built on a slight embankment; the highest fill is only 4 feet. The longest haul on the job, that from a borrow pit, was 2¾ miles. Roadway excavation material was chiefly clay; the borrow pit also yielded clay, along with some sand and gravel.

Most of the dirt was moved by self-propelled scraper units—2 Super C Tournapulls averaging 14 yards a load, and 3 Terra Cobras averaging 15 yards. Also available was a Lima ¾-yard dragline, an Insley ½-yard backhoe, and a fleet of 10 to 14 trucks carrying 3 to 4 yards each. Two Caterpillar D8 tractors were on hand to assist in the loading of the scrapers and for dozer work. Fills were built up in layers not exceeding 8 inches in thickness, and compacted by a pair of tamping rollers pulled by Oliver crawler tractors. Two Galion motor graders handled the final shaping of the subgrade. Trenches for the roadway drainage pipe were dug by a ½-yard backhoe.

A typical roadway section appeared as a trench 27 feet wide x 22 inches deep with the shoulders of the road serving as the sides of the trench. The bottom was graded with a slope of 3/16 inch per foot from the center line to conform to the crown of the finished pavement. Frequent stone-filled drains were provided through the shoulders to drain the base courses. Shoulders are 10 feet wide with a 12 to 1 slope. In the fills the sideslopes vary from 4 to 1 to 12 to 1, while in cut sections the front slope is 4 to 1 to a ditch with a minimum depth of 15 inches; backslope is 3 to 1.

Blanket Course

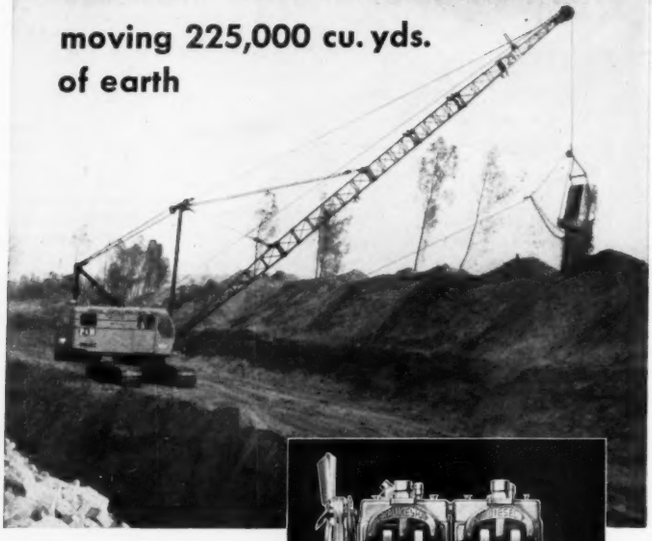
The 9-inch classified-embankment or blanket course was laid to a width of 27 feet on the prepared subgrade. The material was sand-gravel obtained from a local pit and delivered to the job after a 7-mile truck haul. It was laid in two 13½-foot lanes and in two courses; each course had a loose depth of 5 inches that compacted to 4½ inches. A Jaeger power-type aggregate spreader and a Barber-Greene paver laid the material on a subgrade that was moistened by a tank truck. The surface of the bottom course was also moistened before the top course was laid. Moisture content of the sand-gravel courses was maintained at or near optimum for proper compaction.

Right behind the spreader came an International Vibro-Tamper, powered by a Ford industrial engine, that firmly compacted the blanket material. Additional compaction was achieved by

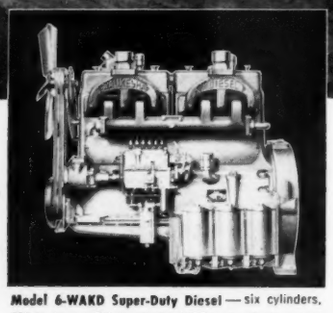
(Continued on next page)

down on the levee...

moving 225,000 cu. yds. of earth



casting up to 300 yds. per hr., THIS P & H DRAGLINE HAS A



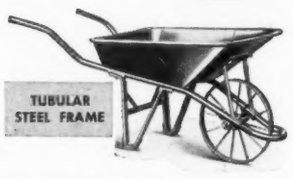
Model 6-WAKD Super-Duty Diesel — six cylinders, 6¼-in. bore x 6½-in. stroke, 1197 cu. in. displacement

WAUKESHA Diesel

• Silt, gumbo and muck! And 225,000 cu. yds. of it had to be moved—for a revetment on the Missouri River. The Usona Construction Co. of St. Louis, Mo., lost no time in doing it. Their Waukesha Diesel powered 3-yd. P & H dragline stayed right with the job—20 hours a day, 5 days a week. Cave-ins were frequent; there was a lot of underwater digging—but the Waukesha Diesel kept on putting out the power, and the P & H averaged 200 cu. yds. an hour, sometimes casting as high as 300 cu. yds. One good job deserves another—now this dragline is speeding up a levee job on the Mississippi River. As shown here on the Missouri job, with a 90-ft. boom and 3-yd. bucket, like all P & H 955-A draglines and shovels it has the 6-WAKD Waukesha Diesel, the engine noted for its snappy, *fast recovery*. That means more loads per minute! For its many unusual performance features, get Bulletin 1415. 169

WAUKESHA MOTOR COMPANY • WAUKESHA, WISCONSIN
New York • Tulsa • Los Angeles

Am I Glad We Have STERLINGS!



At a time when wheelbarrows are scarce, it certainly feels good to have a supply of sturdy Sterling Barrows on hand. Sterlings are so ruggedly constructed, they seem to last forever. In the present emergency, many Sterlings are working overtime, taking hard punishment and coming back for more . . . again proving . . . IT PAYS TO BUY THE BEST.

(Above) Model D3½S Maximum Capacity 3½ cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace support.

(Right) Model C5W Maximum Capacity 5 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Heavy-duty malleable wheel guard.

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

A 5878-½

Macadam Pavements, Inc., Photo

After the limestone had been checked for smoothness and crown, a 12,000-pound International Vibro-Tamper (left) nested it with two passes. Then a Galion 10-ton roller took over and gave it two passes; and finally (right) a Galion 3-wheel 10-ton roller completed the keying of the coarse stone.

rolling with a Galion 10-ton 3-wheel roller. As part of the 8-inch waterbound-macadam base course, a 1-inch layer of stone screenings was spread on top of the upper layer of blanket material.

The coarse aggregate for the macadam base was furnished by the Marble Cliff Quarries Co. of Columbus: the material came from a quarry at Marble Cliff, Ohio, a 14-mile haul from the job. Screenings were furnished by the same company and by the National Lime & Stone Co. from Delaware, Ohio. They were spread by a Buckeye spreader, and constituted a dry, inverted choke. This 1-inch layer was not rolled; the screenings were left free to work up into the coarser aggregate laid above them.

Waterbound Macadam

An Apsco elevating spreader laid the coarse aggregate for the 8-inch waterbound-macadam base course in two passes. The material went down in a single layer 25 feet 6 inches wide and to a loose depth of 11 inches. The stone work started in September, and in general proceeded from the west to the east end of the project.

Gradations of the No. 12 stone, the coarse aggregate, and the screenings follow:

Sieve Size	Per Cent Passing No. 12	Screenings
4-inch	100	....
3½-inch	90-100	....
3-inch	65-85	....
2½-inch	25-60	....
1½-inch	0-15	....
½-inch	....	100
⅛-inch	....	90-100
No. 100	....	10-30

After the No. 12 stone had been laid and checked for smoothness and crown, it was nested with two passes by the Vibro-Tamper. The surface was then checked again for smoothness and crown and, where necessary, corrections were made. The stone was then given two passes with a Galion 10-ton tandem roller; the keying of the coarse stone was completed by a Galion 3-wheel 10-ton roller. Next, one-half of the screenings required to fill the voids in the coarse stone were applied by a Buckeye spreader box. These screenings were vibrated into the voids by the Vibro-Tamper. A second application of screenings, equal to approximately one-half the preceding application, was then made with a Buckeye box and vibrated in with the Vibro-Tamper. The final application of screenings was then made and vibrated into place using two Buffalo-Springfield 3-wheel rollers.

The surface was again checked, corrections were made if necessary, and the base was then waterbound. Water for this operation was secured in part from a sump in the borrow pit and in part from a creek near the west end of the job. Water was applied through

(Concluded on next page)

GOLD WINCH

¾ TON CAPACITY
1001 USES!

Holds 100 Ft. 1/4-In. wire rope. Two speeds: 8.16 to 1 for heavy loads, 3 to 1 for fast operation. Electric steel, bronze bushed.

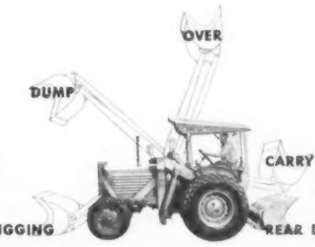
$33.00 less rope

$43.45 with 50 Ft. ¼-In wire rope.

GUARANTEED—five day return privilege. Send remittance with order and we pre-pay shipping. If your distributor doesn't have the GOLD WINCH, send for literature and information:

WRITE GOLD FOUNDRY & MACHINE WORKS
1616 S. Osage • • Independence, Mo.

a STRAIT-LINE is Your Shortest path to Profits!



Digs in Rear . . . or Digs in Front

AND, IT MULTIPLIES TRACTION . . . SAVES TURNING
MAKES STEERING EASIER . . . INCREASES STABILITY

Push-Tilt assures fuller buckets even in fine plaster sand.

It takes plenty of traction to move from bank to truck in rough going like this. Rear-carried bucket makes it possible. And, in hard banks, the extra traction and Push-Tilt give you the same fast, profitable loading.

But here is its Biggest Advantage . . . ADDED TRACTION FROM REAR-CARRIED BUCKET

An Oliver Industrial Wheel Tractor and Strait-Line Loader is the biggest profit asset for any loading operation. It digs in back . . . or digs in front . . . *and loads in front.* No time-wasting turning or backing required.

Here's proof. These photos were taken loading out *plaster sand,* so fine it squirted out through a ten-penny nail hole in the truck body in a stream 4 inches long. Despite this difficult going, the tractor and Strait-Line wheeled its bucket loads *upgrade* without spinning. It ran back from truck to bank with force. This extra traction for difficult conditions is created by the rear carried bucket.

This is a condition where rear digging solved the problem. In fact, under most conditions, the operator can do *more* with rear digging.

Why not check the Oliver Industrial Wheel Tractor Strait-Line for your loading.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

A complete line of industrial wheel and crawler tractors.

THE OLIVER CORPORATION
19300 Euclid Avenue, Cleveland 17, Ohio
Please send me literature on the versatile Oliver Wheel Tractor Strait-Line Loader.

Name.....
Company.....
Address.....
City.....Zone....State.....

Waterbound Macadam On a Road Relocation

(Continued from preceding page)

two water-sprinkling trucks and the rolling was done by two Buffalo-Springfield 3-wheel rollers both of which were equipped with drag brooms.

Blacktop Pavement

After the waterbound-macadam base course had achieved a smooth, tight, closely knit surface and had dried out, it was primed with Barrett RT-2 road tar applied from a 1,000-gallon bituminous distributor at the rate of 0.35 gallon to the square yard. Over this was laid 5 inches of asphaltic concrete in three courses—a 2½-inch base with a width of 24 feet 6 inches; a 1¼-inch-minimum leveling course 24 feet wide; and a 1¼-inch surface course also 24 feet.

The asphaltic concrete came from the commercial plant of the Marble Cliff Quarries Co., which used the limestone aggregate mixed with 70 to 80-penetration asphalt cement furnished by the Standard Oil Co. of Ohio. The mix was delivered to the project in insulated trucks by the Anderson Haulage Co. of Columbus, and laid by a pair of Barber-Greene finishers. Four Galion rollers were available for compaction of the hot-mix—two 10-ton tandems and two 10-ton 3-wheelers.

The composition of the base-course mix, known as Item B-35 base in the Department of Highways specifications, falls within the following range limits:

Passing Sieve	Retained on Sieve	Per Cent Min.	Per Cent Max.
2-inch	1-inch	10	35
1-inch	½-inch	10	45
½-inch	No. 4	5	40
No. 4	No. 6	0	5
No. 6	No. 50	10	40
No. 50	No. 200	2	17
No. 200	.....	0	3
Bitumen	.....	4	8
Total retained on No. 6	.....	60	75

The B-35 leveling course and the T-35 top course, laid separately, have the same proportions, as follows:

Passing Sieve	Retained on Sieve	Per Cent Min.	Per Cent Max.
1-inch	¾-inch	0	5
¾-inch	½-inch	5	20
½-inch	⅜-inch	7	30
⅜-inch	No. 4	10	35
No. 4	No. 6	0	10
No. 6	No. 50	20	45
No. 50	No. 200	3	15
No. 200	.....	0	5
Bitumen	.....	5	9.5
Total retained on No. 6	.....	50	60

Macadam Pavements, Inc., Photo.

A Barber-Greene finisher lays asphaltic concrete for the 1½-inch top course.

Quantities and Personnel

The major contract items were:

Roadway excavation	35,905 cu. yds.
Borrow	33,054 cu. yds.
Drainage pipe, 6 to 36-inch	17,056 lin. ft.
Classified embankment material	18,446 cu. yds.
Waterbound-macadam base, 8-inch	69,957 sq. yds.
Bituminous prime coat	24,486 gals.
Asphaltic concrete, base	4,672 cu. yds.
Asphaltic concrete, leveling	2,411 cu. yds.
Asphaltic concrete, surface	2,415 cu. yds.
Seeding and protecting	209,600 sq. yds.

R. J. Dienst & Son employed an average force of 25 on the road project under the personal supervision of Bob Dienst, Jr., with Chet Ewing as Superintendent.

For the Ohio State Department of Highways, John W. Rees is Project Engineer. The job is located in Division 6, with headquarters at Delaware. E. L. Sheley is Division Engineer and Merle I. Johnson, Construction Engineer. The Department is headed by T. J. Kauer, Director. H. R. Craig is Chief Engineer of Construction.

New Impact Wrench

A ⅜-inch portable pneumatic reversible impact wrench is announced by Independent Pneumatic Tool Co., 175 N. State St., Aurora, Ill. It features an exclusive rolling ball-type cam which is said to increase efficiency and steady functioning of the impacting mechanism.

With side handle and trigger-type throttle, the new wrench weighs 5¾ pounds and measures 8 11/16 inches in length. It is powered by an air motor which transmits power to the impact mechanism through a torque-increasing planetary-gear system.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 726.

Bulletin on Body Hoists

A bulletin on hoists and bodies for heavy-duty trucks is announced by The Perfection Steel Body Co., Galion, Ohio. It illustrates and describes the Models 727, 827, 1027, and 1034 hydraulic hoists and the Series 200 and 300 bodies.

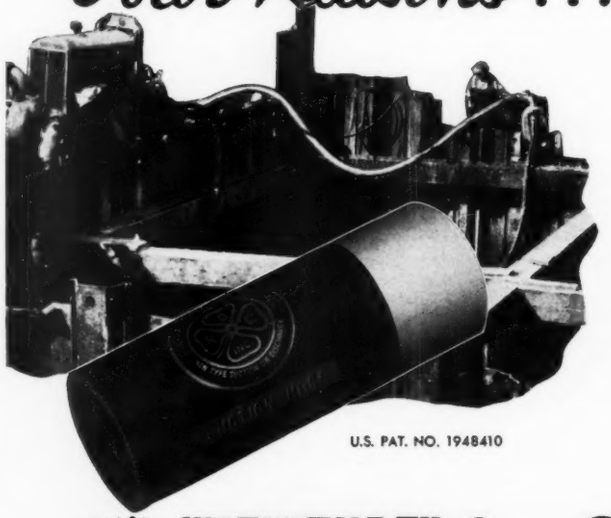
In the Roll-A-Lift hoist, a hydraulic cylinder pivoted on massive trunnion bearings actuates two graduated track arms, which pivot on a heavy cross shaft. Mounted under the body on both longitudinals are two pressure rollers which engage the arms and travel along their upper surfaces as the body rises, providing the highest mechanical advantage at the beginning of the lift.

This literature may be obtained from the company. Or use the Request Card at page 16. Circle No. 849.

Cinkosky for Mercury Clutch

John E. Cinkosky has joined Automatic Steel Products, Inc., Canton, Ohio, as Eastern Zone Manager of the company's Mercury Clutch Division. Mr. Cinkosky, who was formerly Vice President in Charge of Sales for the Centric Clutch Co., Woodbridge, N. J., will supervise the New England, Middle Atlantic, and South Atlantic territories for Mercury.

Four Reasons . . .



U.S. PAT. NO. 1948410

Why "NEWTYPE" Gives Top SUCTION HOSE Performance

1- SPECIAL REINFORCED ENDS lend added strength and resistance to flexing wear back of the couplings, and provide a sturdier, more durable section under the clamps. Ends are colored in bright red for easy identification.

2- KINKPROOF CONSTRUCTION assures full-capacity bore under suction and discharge, always . . . the hose will not buckle or collapse. If accidentally crushed by heavy equipment, it can be rounded into shape again with mallet or hammer.

3- EXTREME FLEXIBILITY with comparative lightness in weight, makes "NEWTYPE" easy to handle, even in longest lengths.

4- INSEPARABLE BONDING of tube, carcass and cover, by patented process, insures extra long service life under severest working conditions.

"NEWTYPE" SUCTION HOSE, STYLE R-35 is made in sizes 1" to 1½", I. D., in maximum lengths of 100 feet; and sizes 2" to 4", I. D. in maximum lengths of 50 feet.

Contact our nearest branch for further details and prices.

PARTICIPATING IN THE MANAGEMENT AND FINANCING OF KENTUCKY SYNTHETIC RUBBER CORPORATION

GOODALL RUBBER COMPANY

GENERAL OFFICES, MILLS and EXPORT DIVISION, TRENTON, N. J.

Branches: Philadelphia · New York · Boston · Pittsburgh · Chicago · Detroit · St. Paul · Los Angeles San Francisco · Seattle · Portland · Salt Lake City · Denver · Houston · Distributors in Other Principal Cities

Est. 1870

Cut Costs! with ONAN portable ELECTRIC PLANTS

MODEL 3CK
3,000 watts A.C.
5,000 watts D.C.
with carrying frame or dolly-mounted

Take 'em Anywhere!

Increase your profits by using fast-working, cost-cutting electric tools on every job, even where highline power is not available. Lightweight, sturdy, Onan engine-driven electric plants supply instantly-available power *anywhere* for lights, drills, saws, pipe-threaders, planers, spades, tampers, repair-shop tools and other motor-driven equipment. Carry 'em, wheel 'em, or truck 'em right to the spot and plug in for all the power you need. Equipped with carrying handles or dolly-mounted.

Lightweight Air-Cooled Models: A.C.—400 to 3,000 watts. D.C.—750 to 5,000 watts. Heavy-duty models to 35,000 watts.

Write for Free Folder!

Onan PRODUCTS

D. W. ONAN & SONS, INC.

7473 University Ave. S.E., Minneapolis, Minnesota

Quit Playing Poker With Your Life, Man!

Relax, Stop Worrying, and Know Your Doctor as a Friend; You Can't Live Forever, but You Can Live Longer

By ERNEST W. FAIR

• "THERE'S no more cantankerous individual than the modern business or professional man when it comes to taking care of himself," a doctor friend of mine declared the other day. "He'll rush the kids to the hospital on the slightest pretext and yell for the family doctor whenever his wife looks tired. But take care of himself? Never! At least not until he's had one good scare."

It's true. Most business and professional men consider themselves rugged individuals. They have a Superman complex and think they can take on more things healthwise than the average individual. Yet their work often gives them less than average exercise of body, confines them indoors, and creates nervous tensions by the score.

"Accumulated nervous tension," another doctor told me not long ago, "is more damaging to a professional man's constitution than anything else. Maybe it's the tempo of today's business, maybe it's something else. But one thing's sure: we're not taking enough time these days to relax."

Not many of us would pay $100 in a poker game to draw two cards to an inside straight. But we sometimes take on equally impossible odds with our health—like working late three nights in a row. If we're smart, we'll play the health odds even closer than the poker odds—and take a few simple precautions. They won't assure our living forever, but they will be a pretty good guarantee of our living longer.

Relax, Mister!

We can run the motor in our car without rest for just so long. Then it becomes sluggish, loses its hp, and demands attention from a motor medic. The same holds true for the human body: its ability to keep going at top speed is good, but limited. So slow down. Give every part of your body machine a rest. If you do, it will keep functioning at peak efficiency much longer.

Your mind, too, has to relax. So learn to separate your business from your personal life. "We never hire a junior executive who can't separate his business from his personal life", the head of a large national organization told me recently. "The executive who can approach his business with a fresh and alert mind every morning is the one who has left his business in the office the night before."

One way to leave business behind is to go home to a hobby. The business man who has a real hobby—anything from growing prize rose bushes to building model railroads—generally lives longer, gets a bigger kick out of every day of his life, and is in top shape mentally and physically all of the time. But it must be a real and powerful hobby—one that completely absorbs him and gives him utter mental freedom from his business problems. A mere pastime will provide an interlude but not complete relaxation and freedom from worry.

Stop Worrying

"Worry gets most business men", I have heard expert after expert declare. And I have seen business worries play havoc with many friends of mine. No matter how tough the latest tax problem, how large and hungry the wolf at our door, worry and fret do no good.

There's nothing like play to lick a worry. "Whenever I catch myself worrying about a business problem," a friend told me, "I grab my hat, rush home, pack my fishing gear, and head for the nearest angling spot. The problem waits for me. And when I come back, I'm in much better shape to work it out."

Bad-Tempered? Ambitious?

It's even possible—and healthful—to

(Concluded on next page)

MAKE EQUIPMENT CLEANING EASY

CONCENTRATED . . . LIQUID

SUPER GREASEMASTER

"The Answer to a Long Standing Need"

REDUCES CLEANING TIME UP TO 59%
CUTS CLEANING COSTS UP TO 47%

For everything from degreasing heavily coated equipment, to washing motors and painted trucks.

Special air gun or hydraulic sprayer furnished with SUPER GREASEMASTER — that's all you need.

Spray it on — hose it off with cold water, steam or hot water. Economical SUPER GREASEMASTER is diluted with kerosene.

Sold On
30-Day Free Trial Basis
STEWART-HALL CHEMICAL CORP.
Mt. Vernon, New York

WRITE TO DEPT. CEM
For Descriptive Bulletin
Distributor Inquiries Invited

UNI-FORMS... "TOPS" in CONCRETE FORMING

A STEP IN THE RIGHT DIRECTION

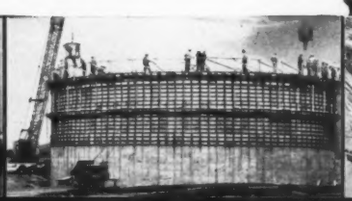
Save TIME, MATERIAL, LABOR—form your concrete with UNI-FORMS—the world's fastest, most versatile concrete forming system.

UNI-FORMS are standard forming equipment with the industry's leading contractors. More than 15,000,000 sq. ft. now in use. Investigate UNI-FORMS today. Watch them work—there's a UNI-FORM job near you now. Write for the UNI-FORM catalog and complete details.

UNI-FORMS FORM ANYTHING!

Bridges, Overpasses, Culverts

Concrete Houses, Apartment Buildings



Sewage Disposal Systems, Water Treatment Plants

Heavy Industrial Structures

Universal FORM CLAMP CO.
Concrete Form Specialists Since 1912

General Offices and Factory • 1236-38 NORTH KOSTNER • CHICAGO 51, ILLINOIS • CAPITOL 7-1600

Branch Offices and Warehouses:

• SAN LEANDRO, CAL., 2051-9 Williams St.
• HOUSTON, TEXAS, 2314 Preston Ave.
• EUCLID, OHIO, 24901 Lakeland Blvd.
• NEW YORK, N. Y., 51 E. 42nd St.
• BALTIMORE, MD., 661 S. Monroe St.
• SWAMPSCOTT, MASS., 51 Barnstable St.
• HATO REY, PUERTO RICO, Ave. Munoz Rivera 84—Stop 27½

Service Wherever You Build...Coast-to-Coast

Quit Playing Poker With Your Life, Man!

(Continued from preceding page)

develop an easier disposition. We know that frequent high-speed spurts on our automobile engine are damaging. Well, temper tantrums do our body no good, either.

And remember—we can't all be Henry Kaisers. Doctors say that overpowering ambition has shortened many a man's life from five to twenty years. It's enough for any man these days to handle the problems of his own business. That alone takes top health. It takes top health to have the mental and physical energy for making intelligent decisions. It takes top health to be ready for unexpected emergencies in the life of one's business. It takes top health to be the kind of executive who inspires results from the people around him.

Follow Simple Health Rules

There are as many "systems" for getting or keeping health as there are subparagraphs in an OPS regulation. But medical men generally advise that fads and nostrums and easy-to-follow schemes are not only worthless but dangerous.

Here's a suggestion. Your insurance company is vitally interested in your living as long as possible, and it has all sorts of good health literature based on the vast medical knowledge accumulated in the past 20 years. Why not ask your agent for a booklet and follow the simple rules of health it lays down?

Know the Danger Signs

When the family car starts to clatter-bang, we know there's trouble and rush it to the garage. But all too often we ignore a clamor in our own body, or we reach for a pill and forget all about the warning until the next time it occurs.

The human body is a marvelous piece of machinery and is loaded with scores of safety valves and warning signals—if we will but listen to them. The majority of cancer deaths could have been prevented, we are told, if the disease had been spotted in first stages. Nervous breakdowns can be prevented, and so can a lot of other mental and physical ailments.

When there's a clatter-bang in the body, it's no time for a pill. It's time to have a checkup with the family doctor and see what the warning is all about.

Let Doc Be Your Friend

Too many of us look on the family doctor as the caretaker of our children and our wife—never *our* caretaker and our friend as well. We swear by regular maintenance checkups for our business equipment—yet neglect to check up regularly on our own physical and mental condition. That just doesn't make sense.

Our average life expectancy has soared in the past 25 years because of the wonders of preventive medicine. Yet we fail to take advantage of those wonders unless we give our doctor a chance to discover the need for them early. His ability to help us depends on his knowing all about us all of the time.

Every business man has learned how important it is to operate his business on a budget. The really smart man is the one who finds time for relaxing, playing, and taking care of his personal machine—who has learned how to budget the business of staying alive a long time and staying alert all of the time. He doesn't wait for the good scare to teach him, since the scare turns out so often to be the end of the line.

Bulletin Discusses Strength Of Air-Entrained Concrete

Just what effect do entrained air bubbles have on the strength of concrete? This question is effectively answered in the January issue of the "Darex AEA Technical Bulletin" issued by Dewey & Almy Co., maker of Darex AEA, catalyzed air-entraining agent.

A complete analysis is presented of basic theories, changes in slump, increases in yield, load-bearing capacity, workability, and types of air-entraining agents. Graphs and tables illustrate the various strength comparisons between ordinary and air-entrained concrete.

This issue of the bulletin and five previous issues covering other important phases of air entraining are available from the Dewey & Almy Chemical Co., 62 Whittemore Ave., Cambridge 40, Mass., or by using the Request Card at page 16. Circle No. 751.

Data on Masonry Drill Bits

A folder describing a line of masonry drill bits is available from New England Carbide Tool Co., Inc., 60 Brookline St., Cambridge 39, Mass. Complete specifications and methods are listed for precision drilling in hard concrete and soft, medium, and hard masonry.

Cyclo-Core rotary bits from ¾ to 4 inches in diameter are recommended by the company for drilling hard concrete with bluestone, granite, or pebble aggregate. For soft and medium masonry, 3/16 to 1-inch-diameter Cyclo-twist drills are advised. A carbide-tipped hammer bit is used on hard masonry.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 734.

Supply Tanks FOR HAULING HOT OR COLD BITUMINOUS MATERIALS

Semi-Trailer models are made by the famous Littleford Frameless Construction — no trailer frame is needed.

The Littleford Supply Tank transfers its Bituminous Material to the Bituminous Distributor for fast economical spraying.

To keep the Spraying Units on the job the Littleford Supply Tanks hauls the Bituminous materials from the source of supply without interruption. These Supply Tanks are the backbone of all road construction and maintenance jobs. Made with or without heating units or transfer pumps, these units speed up the work, are economical to operate and save labor costs. Made in semi-trailer or truck mounted models in sizes ranging from 2000 to 5000 gal. Semi-Trailers, made without the use of a trailer frame, are known as the "Littleford Frameless Constructed Supply Tank".

Make your next road job a low cost modern undertaking, use modern methods and modern equipment, Littleford Supply Tanks.

LB LITTLEFORD

BLACK TOP ROAD MAINTENANCE EQUIPMENT SINCE - 1900

LITTLEFORD BROS., INC.
485 E. Pearl St., Cincinnati 2, Ohio

easy? just look! simple as A-B-C
TILT-LOAD - ON YOUR WAY

PSC

JAHN TILT TRAILER

. . . a *one-man* operation from job to job. Just tilt the trailer bed, drive your equipment aboard and you're off to the next assignment. All this in a matter of minutes.

This rugged Jahn Tilt Trailer will safely and economically transport tractors, rollers, compressors, mixers and many other types of heavy construction equipment . . . a silent partner in your business of conserving man-hours and saving money.

For further information, fill in and mail attached coupon today.

PRESSED STEEL CAR COMPANY, INC.
Jahn Trailer Division
6 N. Michigan Ave. Chicago 2, Ill.
Dept. CEM

Dear Sir:
Send me literature on Jahn Trailers of the load limit checked, without obligation.

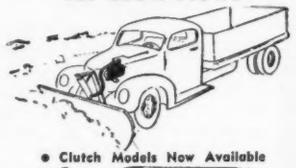
☐ 8 ton tilt ☐ 20 ton semi ☐ 25 ton semi ☐ 30 ton semi

Name_____

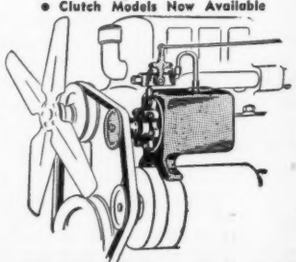
Address_____

City_____ State_____

POWER HYDRAULICS
for Snow Plows

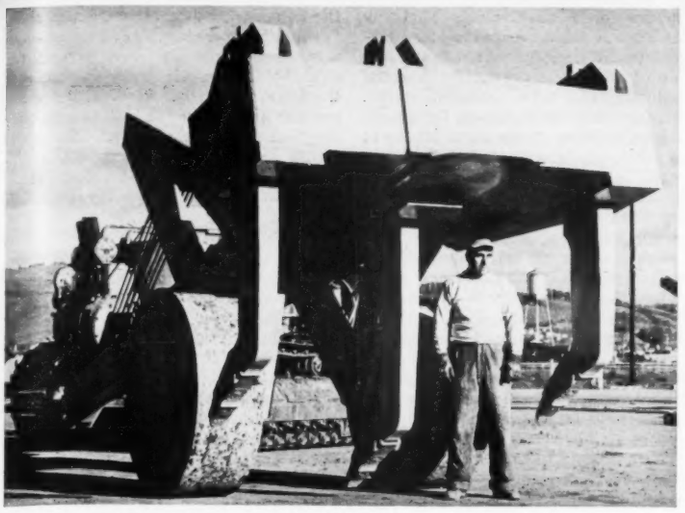


• Clutch Models Now Available



• THOUSANDS IN USE • FIT ALL TRUCKS
• FAN BELT OR ELECTRICALLY DRIVEN MODELS.
• *Write Hydraulic Division*

MONARCH ROAD MACH. CO.
323 N. Front Ave., Grand Rapids 4, Michigan



The Peterson 15-ton ripper will penetrate 60 inches in tough material. The center tooth has three depths of penetration; the outside teeth have two.

New 15-Ton Ripper

A 15-ton ripper capable of penetrating 60 inches in extremely tough material is made by Peterson Tractor & Equipment Co., San Leandro, Calif. It is designed to take the combined drawbar pull of six large tractors or 180,000 pounds on the center tooth alone.

Peterson claims the unit will rip any laminated or foliated material such as shale, decomposed granite, etc. The center is designed for three depths of penetration—60, 48, and 36 inches; the outside teeth for two depths—48 and 36 inches. The ripper has many applications and will often eliminate the need for explosives to shatter material to be handled by scrapers or shovels, the company says.

The unit is 9 feet wide and 25 feet 6 inches long. Height (loaded for shipping) is 9 feet 9 inches and wheels are 18 inches wide. It has a 52-inch diameter and a 5 x 15-inch rooter shank.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 848.

File for Rolled Maps

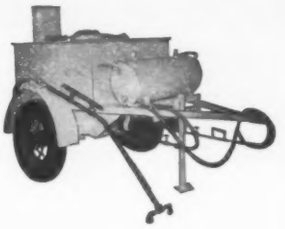
A line of vertical and horizontal map files is made by Ross-Martin Co., P. O. Box 800, Tulsa 1, Okla. The H-342 files rolled maps up to 42 inches wide in 112 tubes of 2-inch inside diameter. The larger H-354 unit is 12 inches deeper for filing maps up to 54 inches wide in 84 tubes, each 2⅜ inches. These horizontal files have disappearing doors, metal index plates and locks, and removable tops and bases on each section.

The V-96 vertical file has a pull-out drawer which gives access to 96 vertical tubes, each 1⅞ inches. Maps, blueprints, and tracings up to 54 inches wide can be filed in the dustproof fire-resistant cabinet. Both units come in modern gray or olive-green baked enamel with brushed bronze trim.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 786.

This Kraftbilt Rollfile files maps horizontally in tubes. The cabinet is fire-resistant.

White Heating Kettles Have Fire-Proof Tops



Cut-back and highly inflammable road repair material can be heated safely in White kettles. FIRE-PROOF top reduces fire hazard.

White asphalt and tar kettles are extensively used. They give long life and satisfaction.

Plain kettles or with hand or engine driven spray pumps for patching pavement. Thermometer, barrel hoist, warming hood extra All oil burning. Semi-elliptic springs, pneumatic tires.

65, 110, 165, 220, 300-gallon capacities.

Model F-10 is oil jacketed, to heat elastic joint filler.

Write for Circulars and name of nearest dealer

White Mfg. Co.

ELKHART 9 INDIANA

Other Products

CONCRETE VIBRATORS
Gasoline Engine and Electric Motor Driven Models

ASPHALT PLANTS
Portable—Stationary

FRONT END LOADERS
for Industrial Tractors

KEROSENE TORCHES
3 to 20-gal. capacities

HERE'S WHY THE BUFFALO-SPRINGFIELD

KT/7

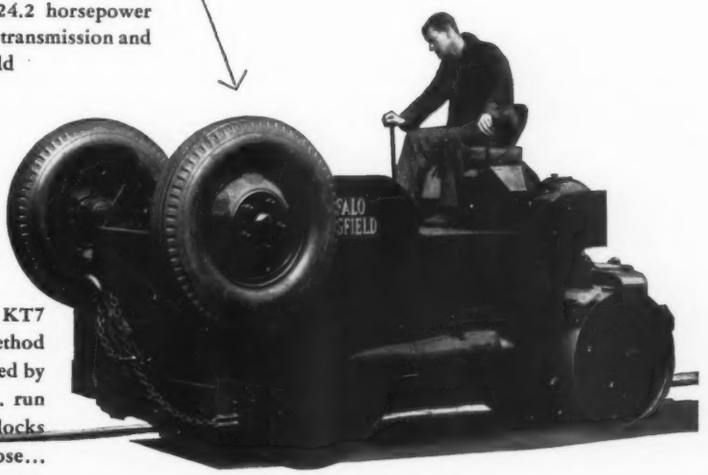
IS THE WORLD'S

most useful

PORTABLE

IT'S A CONVENTIONAL TANDEM ON THE JOB

The 3 to 5 ton KT7 is ruggedly built to designs that have made Buffalo-Springfield Rollers famous the world over. Guide and drive rolls are made of heavy steel plate. The compact 4-cylinder engine delivers 24.2 horsepower through a simple two-speed transmission and the famous Buffalo-Springfield bevel gear final drive.



EASILY RIGGED FOR TOWING

One man can rig the KT7 for towing by this method originated and developed by Buffalo-Springfield . . . run the roller up on wedge blocks provided for this purpose... remove wheels from carrying bracket and insert in towing position . . . hook up towing attachment to truck . . . use built-in hydraulic jack to raise the drive roll.

. . . IN JUST 3 MINUTES the KT7 is ready to travel!

A WILLING WORKER FOR MANY JOBS

Driveways, parking lots, roads and streets, maintenance . . . easy portability of the KT7 makes it possible to accomplish many jobs in a single day. It's a willing worker, too—hydraulic steering and exceptional maneuverability make jobs go fast—save wear and tear on operators—give you a quality job you'll be proud of.

And KT7's low cost and time-saving ability will mean a new rate of profit for your operation.

THERE'S A BUFFALO-SPRINGFIELD DISTRIBUTOR CONVENIENTLY LOCATED TO SERVE YOU

ASK YOUR DISTRIBUTOR FOR COMPLETE DESCRIPTION AND SPECIFICATIONS IN BULLETIN S-58-49 OR WRITE

BUFFALO SPRINGFIELD
THE STANDARD OF COMPARISON
SPRINGFIELD, OHIO

THE BUFFALO-SPRINGFIELD ROLLER COMPANY

Highway Men Demand The Decontrol of Steel

Atlantic City Convention Hears American Bridge President Declare Industry Best Suited to Make Allocations

• "FOR our economy's survival, the present controls must be terminated just as soon as conditions permit; for government control is often wasteful, often arbitrary, and often subject to political pressure." This criticism of the Government's Controlled Material Plan by F. K. McDanel, President of American Bridge Co., echoed the sentiments of the 1,300 steel-conscious delegates attending the 28th Annual Convention of the Association of Highway Officials of the North Atlantic States.

Meeting March 5-7 in Atlantic City, N. J., representatives from the eleven northeastern states and the District of Columbia heard leaders from industry, national organizations, and highway departments call upon the Federal government to take immediate steps leading to the decontrol of steel. Speaker after speaker bemoaned the fate of the nation's fast-deteriorating streets and highways.

Blames Maldistribution

In a dramatic exchange of questions and answers by McDanel and E. W. Buckius of Pennsylvania's Highway Department, the American Bridge president told the group that maldistribution of steel will practically put the small fabricator out of work this spring. He added that steel enough for all the nation's highway bridges was sitting in the stock yards waiting for plates.

"We can't fabricate chords and diagonals without the missing items", he said. The National Production Authority gobbled up all the plates, and although a fabricator might have 90 per cent of the material necessary for a bridge, there is no alternative but to wait, reported McDanel. Concerning steel allocating, he said: "Given the opportunity, I believe the steel industry is better qualified to do the job faster, at lower cost, more efficiently, and with considerably less confusion."

Highways Slighted

New Jersey's Highway Commissioner Ransford J. Abbott keynoted the convention by asking all members to dedicate themselves "to bring to the attention of the nation the need for our national network of arterial highways to be properly weighted in providing a satisfactory defense effort." He declared that only one per cent of the all-time-high output of steel in various forms is allocated for highway purposes.

Abbott's opening plea was accentuated during the second session by A. C. Clark of the Bureau of Public Roads. A recent compilation, he reported, showed that "nearly two-thirds of all Federal-Aid highway mileage is below tolerable standards of adequacy and should have early improvements."

B. D. Tallamy, President of the American Association of State Highway Officials, revealed that America's highways are deteriorating faster than they are being replaced. He discussed a study made two years ago which indicated a highway-building deficit of $29 billion. Since that time, he said, $3 billion was spent and now the deficit is up to $32 billion.

Paul B. Reinhold, President of the American Road Builders' Association, also pointed to the seriousness of the problem when he revealed that an average of 3,000,000 more vehicles each year pour onto a highway system which is about "one-third abreast of the requirements of present-day normal and defense traffic".

A ray of hope was shed on the group, however, when Richardson Bronson of the NPA assured the highway men that "definitely, in the absence of an all-out war, there will be more structural available for public highways in the third and fourth quarters of this year and the first quarter of 1953 than in the previous quarters." He said that steel would be tighter in the second quarter because too many tickets had been issued in the first quarter.

Weathering the Shortage

Both McDanel of American Bridge and Clark of the Bureau of Public Roads offered the steel-starved highway departments a program for weathering the present shortage. McDanel advised members to concentrate tickets on the more important jobs and get them completed rather than spreading them so thin that nothing is completed.

Clark said the BPR is giving "consideration to the issuance of allotments to highway departments for specific projects so that better timing of work can be developed with contractors and steel fabricators." He also reported that the Bureau has asked the Defense Production Administration to advance quarterly "allotment authorizations so that highway departments may better plan their engineering assignments, lettings, awards of contracts, and fabricators' schedules by knowing for a longer period the size of the steel quota against which plans can be drawn."

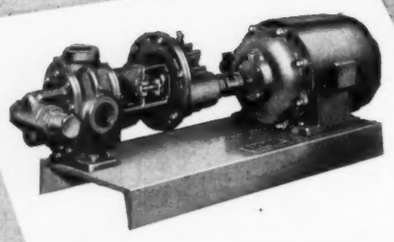
Resolutions

As a result of the general feeling at the convention, a resolution was passed urging that the DPA and the NPA "make sufficient controlled materials available to permit the various highway departments to place under contract this year all of the projects on their programs . . . and that steps be taken immediately leading to the decontrol of steel at the earliest possible moment."

Another resolution taken by the Association opposed passage of Senate Bill No. 2585, introduced by Senator McKellar of Tennessee. This bill provides for 100 per cent reimbursement by the Federal government of all costs incurred for the relocation, removal, or alteration of any public utility required in connection with Federal-Aid highway construction. The group charged that the measure would tend to restrict already inadequate funds for highway construction. They asserted that it was

(Concluded on next page, col. 2)

EFFICIENCY + PLUS



THE DEPENDABLE ROPER

FOR GENERAL PURPOSE PUMPING

What do you expect of the pumps you install? Efficiency, dependability, endurance, simplicity, an unusually high record of performance? If these are your requirements, by all means investigate the Roper 3600 Series; pumps that are engineered to do a wide range of jobs handling both thick or thin clean liquids.

At this very moment the interests of tank truck operators, refineries, bulk stations, process plants and general industries are being served by thousands of Ropers. The size for your needs can do an equally productive job for you!

OUTSTANDING FEATURES...OUTSTANDING PERFORMANCE

Pumping liquids from A to Z calls for quality-made components accurately assembled. Series 3600 pumps feature hardened helical pumping gears; heavy duty, high-lead bronze bearings; adjustable relief valve (from 20 to 90 P.S.I.); split packing gland; one-piece case of practical design. Standard or special fitted models available. Pressures to 60 P.S.I. — capacities 40 to 300 G.P.M.

Send Today For "HOW TO SOLVE PUMPING PROBLEMS"

FREE ON REQUEST

SEE OUR CATALOG IN SWEETS

ROPER Rotary Pumps

GEO. D. ROPER CORP.
224 Blackhawk Park Ave.
ROCKFORD, ILLINOIS

Maginniss HI-LECTRIC CONCRETE VIBRATORS ON THE JOB-

VIBRATING HIGHWAY PAVEMENTS

NO FLEXIBLE SHAFTS

●

ELECTRIC MOTOR IN HEAD

●

REMOTELY CONTROLLED BY OPERATOR

With a Maginniss HI-LECTRIC Vibrator, concrete placing in any type of form is faster, cheaper, effortless, with a better looking job when the forms are removed.

Maginniss POWER TOOL CO.
MANSFIELD, OHIO

Denise Darcel shaped up as "Miss Welder of 1952" at a recent meeting of the National Eutectic Welders' Clubs.

"Miss Welder of 1952"

Denise (talk about construction jobs) Darcel, delightfully provocative MGM motion-picture, stage, and television star, has been officially named "Miss Welder of 1952" by the National Eutectic Welders' Clubs. Curvacious Denise was selected as "the girl we would like most to weld with" by the graduate body of professional welders who attend the Eutectic Welding Institute to learn modern techniques of metal-joining with Low-Temperature welding alloys.

Her selection was the result of the welders' heartfelt recognition of her "outstanding qualities of beauty, physical charm, poise, determination, endurance, meticulousness, emotional stability, ready wit, and unselfishness". R. D. Wasserman, President of the Eutectic Welding Institute and the company bearing that name, presented a scroll to Miss Darcel, expressing the hope that her photograph would inspire women throughout the nation to join the ranks of the labor force so vitally needed for America's defense effort. (What it will inspire the men to he didn't mention.)

The luncheon was held for the purpose of announcing and demonstrating to the press a new product, Chamfer-Trode, "a welding rod in reverse". Chamfer-Trode is a cutting or gouging metal-removing electrode that virtually atomizes the metal removed, leaving the base metal relatively cold.

New Conveyor Chain

A heavy conveyor chain that makes a 180-degree turn within a theoretical 3-inch inside radius has been developed by the Conveyor Specialties Co., 666 E. Third St., St. Paul, Minn. Sections of C-S No. 7 can be coupled or uncoupled without tools in less than 5 seconds, the company says, by means of a transverse T one-piece connecting lug between double U-shaped links. It may be used with standard curve wheels ranging from 6 to 42 inches in diameter.

The chain is all-steel, with a case-hardened surface to increase wearing resistance while providing a tough normalized core. Links have a 3-inch pitch; the connecting lug is of high-tensile (forged) steel alloy.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 847.

The C-S No. 7 conveyor chain makes a 180-degree turn within a theoretical 3-inch inside radius.

Highway Men Demand The Decontrol of Steel

(Continued from preceding page)

not only in opposition to state laws, but would give more power to the Government.

Other resolutions recommended that the right of taxation on motor fuel be reserved to the states, and opposed the taxation of income from state and municipal bonds.

Panel Discussions

After all had been said about the critical materials situation, delegates from all the represented states formed a panel to discuss inter-state cooperation for the development of modern highways. Representatives lauded the excellent relationships which exist between the states, and reported on the interstate highway system.

The final session consisted of a panel discussion of rigid and flexible-type pavements. Members of the Asphalt Institute and the Portland Cement Association reported on the latest research in these fields and answered questions from the group.

Officers

Ransford J. Abbott, New Jersey State Highway Commissioner and former Vice President of AHONAS, was elected President of the Association for the coming year. He succeeds the late Ray F. Smock, former Secretary of Highways for Pennsylvania. G. Albert Hill, Connecticut State Highway Commissioner, was made Vice President.

Newly elected to the Board of Directors were John O. Morton, Deputy Commissioner of Highways and Public Works for New Hampshire; Edward L. Schmidt, Pennsylvania Secretary of Highways; and Earl J. Mattis, Superintendent of Highways for St. Lawrence County, New York.

POWER PLANTS SPEED CONSTRUCTION

Use Power Tools—Flood Lights

Winpower Portable Electric Plants provide a dependable, low cost power source . . . speed up work performance by operating time and labor saving power tools. Winpower Nite-Hawk units give power plus built-in floodlights. Every contractor should use these high efficiency, quality built plants.

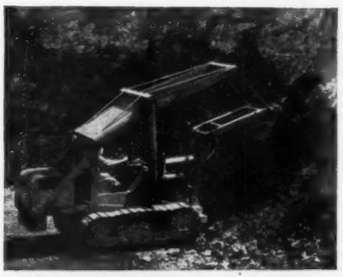
300 to 10,000 watts A.C. or D.C.

WRITE FOR LITERATURE AND PRICES

WINPOWER MFG. CO., Newton, Iowa

We Engineered the Mechanical Advantages Of Big Shovels into the Dempster-Diggster

The Dempster-Diggster's ability to dig hard and stratified materials without shooting is shown in photo at right. Note ample loading clearance. Dempster-Diggster, shown at work in Florence, Ala., is the Type GRD, Model 100.



This Dempster-Diggster, shown at work in Creighton, Pa., is also loading hard and stratified material without shooting. It is the Type CR, Model 100.

The Type GRD, Model 100-HL is shown above loading Hopper Bottom car, height of which is 10'8" from rail to top of car.

Simultaneous Independent Hydraulic Crowding and Hoisting, Variable Crowd Action at Any Dipper Position and Changeable Buckets are engineered into the Dempster-Diggster. Many of the present Dempster-Diggster owners were at one time in the same position you may be in today. They needed front end loaders, but they also needed shovels that could dig out 15 to 18 foot banks. The versatility of the Dempster-Diggster, plus its economical and efficient operation, left them with only one choice. In the first place, the Dempster-Diggster can do anything a conventional front end loader can do—and do it faster and at less cost! Second, on big jobs the Dempster-Diggster is without equal for working in tight places. The Dempster-Diggster is available in either of two types of traction—pneumatic (Type GRD) or crawler (Type CR). Both types are supplied in two models—the Standard (Model 100) or High Lift (Model 100-HL). Our new catalog No. 1032, with over 35 illustrations and complete specifications, shows how this revolutionary shovel can cut your costs tremendously. For your copy fill in the attached coupon and mail today!

DEMPSTER DIGGSTER

Please send me, without obligation, your Dempster-Diggster Catalog #1032.

Name_____

Address_____

City_____ State_____

DEMPSTER BROTHERS, 442 Shea Bldg., Knoxville 17, Tennessee

New-Model Excavator

A ¾-yard excavator convertible to a crane, shovel, dragline, or pull shovel is announced by American Hoist & Derrick Co., 63 S. Robert St., St. Paul 1, Minn.

The Model 375 BC has a machinery platform that is an integral rolled-steel electrically welded unit, rather than the conventional cast center with bolted-on walkways. Track pads are double-walled special steel castings with full-length pins. The steel used is a special development that is said to reduce abrasive wear to a minimum and withstand the shock and strain of rough travel without breakage.

Manten or Corten, a special light-weight alloy steel, is used in the boom to eliminate dead weight. The boom lowers against the compression of the engine and can be controlled at any speed desired by the operator. The maximum lowering speed is the same as the maximum raising speed, assuring safety.

The Model 375 BC ¾-yard excavator is designed for rough travel and heavy duty. It converts to crane, shovel, dragline, or pull shovel.

Ball-joint rod-end bearings are used in the hoist, swing, and travel linkage system, while antifriction bearings are used in the brake linkage system. This feature is said to reduce pedal-operating effort approximately 60 per cent and give the operator a better feel of the brakes. The shovel is equipped with an electric dipper trip operated by pushbutton.

Further information on the Model 375 BC may be secured from the company. Or use the Request Card at page 16. Circle No. 819.

AGC Approves Essick Pumps

The Contractors Pump Bureau of the Associated General Contractors has accepted a line of pumps manufactured by Essick Mfg. Co., Los Angeles, Calif. The pumps include units from 1½ to 8 inches, which comprises the entire size range covered by AGC ratings. Essick also produces a 10-inch pump with a capacity of 200,000 gallons per hour, and several special Hi-Head models.

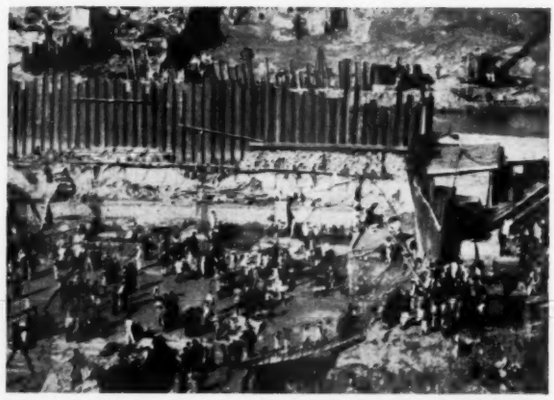
McKIERNAN-TERRY PILE HAMMER

helps build a dam in **India**

The land of the Taj Mahal is going modern in a big way. In fact, the Damodar River project, which includes two dams and a steam power station, will supply power for the most highly industrialized region of India. Harza Engineering Company served as consultants on this project.

Naturally, a McKiernan-Terry Pile Hammer was called on to do a vital pile-driving job on this $142,000,000 project. Hundreds of steel piles for the cofferdam, shown in the photographs, were punched down with a McKiernan-Terry No. 7 Double-Acting Hammer.

Yes, in the far corners of the world . . . as well as on hundreds of pile driving jobs in the United States . . . McKiernan-Terry Pile Hammers and Extractors are the first choice of contractors. The wide range McKiernan-Terry line includes 16 sizes of hammers and 2 sizes of extractors. Bulletin gives full details. Write for your copy.



McKiernan-Terry No. 7 Double-Acting Pile Hammer

OTHER McKIERNAN-TERRY PRODUCTS

MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES
Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation.

GRAB BUCKETS
Range of types and sizes take bulk materials loads up to 25 tons. Ruggedness without excess weight.

HONING UP TO 42-IN. I.D. X 55-FT. LONG
Typical of the extensive facilities of McKiernan-Terry for unusual jobs.

McKIERNAN - TERRY CORPORATION
Manufacturing Engineers
19 PARK ROW, NEW YORK 38, N.Y.
Plants: Harrison, N.J. and Dover, N.J.

McKIERNAN TERRY

MK 318

Wanted:
a new kind of Crusader

. . . . to help fight the strongest foe in the world—*cancer.*

Who is he? *He is any generous person giving freely to the American Cancer Society's Cancer Crusade.*

He believes that the light in the "lab" must not be extinguished . . . that his fellows must learn to recognize the symptoms of cancer and the need for early diagnosis . . . that more doctors, nurses and research scientists must be trained.

A victory against cancer now may mean protection for you later. Won't you help us by giving freely—giving generously—giving now? Mail your contribution to "Cancer" care of your local post office.

Help us fight your battle
Give to the
Cancer Crusade of the

AMERICAN CANCER SOCIETY

Calcium Treatment Lowers Blading Costs

County Superintendent Estimates Saving of 25 Bladings and 50 Cubic Yards of Gravel per Mile per Year

• A SIXTEEN-YEAR performance study of calcium-chloride-treated gravel roads in Onondaga County, N. Y., was sponsored recently by the Secondary Roads Committee of the Highway Research Board. It revealed that treatment saved about $65 per mile per year. Speaking at the Board's recent Washington, D. C., conference, E. M. Baylard, Onondaga County's Superintendent of Highways, estimated that treatment had saved 25 bladings and 50 cubic yards of gravel per mile per year.

The method of investigation was decided in June, 1951, in cooperation with representatives of the Bureau of Public Roads in Washington and Albany, the Bureau of Soils Mechanics of the New York State Department of Public Works, the Calcium Chloride Institute, and the Solvay Process Division of Allied Chemical & Dye Corp. Over 100 miles of an original 435 miles of treated roads were still in use in Onondaga County, and 12 test roads, representing conditions in the four quandrants of the county, were selected for comparison with untreated-gravel roads studied earlier by the University of Michigan.

On the first inspection trip, distinct lines of demarcation between gravel and subgrade soil were found in all test trenches, and it was agreed that since actual gravel depths could be measured accurately, a gravel-loss study would be the primary objective. In addition, the committee also decided to make studies of surface gravel, in-place densities, traffic densities, subsoil data, weather data, and maintenance methods and costs.

Gravel Loss

Onondaga County first began its calcium-chloride road program in 1932. A standard road design was adopted which consisted of a 20-foot width of bank-run gravel on a 26-foot-wide flat subgrade. The 9-inch crown was formed by blading, followed by rolling and honing. After rolling, the final average compacted depth was determined to be 4.75 inches. Calcium chloride was spread with a lime spreader at the rate of 1½ pounds per square yard.

Both trench and crown methods were used in the 1951 study to determine the average depth of existing gravel on each test road. A 10-inch-wide trench over half the road width exposed the line of demarcation between gravel and subgrade soil. Measurements to the nearest 0.1 inch were made at the center line and at one-foot intervals to the road's edge. Assuming both halves of the road to be identical, the average depth was calculated. Trenches were alternated at succeeding stations.

The crown method employed a 10-foot wooden straightedge which was set on the crown and then held level by an adjustable leg at the outer end. Measurements from the bottom face to the gravel surface produced average depths very similar to those produced by the trench method. Because of this similarity and also because the crown method was used on both halves of the road, these values were used to calculate the final average depths.

Measurements were made at 42 stations on the 12 test roads representing about 33 miles. Gravel loss was determined by comparing the present calculated average gravel depth with the compacted 4.75 inches when the road was first built.

Three of the 12 roads showed slight increases in depth, and the remaining 9 lost from 0.62 to 3.45 inches. The average loss for all 12 roads was 1.186 inches or 387 cubic yards of compacted gravel per mile. The average age of the roads was 16 years, which gave an average loss of 23.5 cubic yards per mile per year.

Densities and Traffic

Density tests using the sand-funnel method were made at 8 stations on 5

(Concluded on next page)

PREHY Construction Equipment
(Weber system)

TYPE "S" GROUTER & PLACER. INDISPENSABLE EQUIPMENT FOR:—
- Plastic and Fluid Pressure Grouting
- Railroad Track or ballast Grouting
- Correction of structural deficiencies, arresting settlement of sinking foundations, floors, piers, etc.
- Conveying and placing insulating materials.
- Soil Stabilization

Concrete Gun

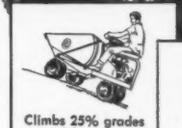
Type "S" Grouter

CONCRETE GUN efficiently designed for GUNCON (*gun applied concrete*). For
- All types of masonry structures including reservoirs, tunnels, bridges, bomb shelters, etc.
- Repairing deteriorated or spalled concrete, fireproofing, etc.
- Dry or Wet Sandblasting.

Write for descriptive literature. Some dealer franchises available.

C. L. BALLARD
(Successor to the Prehy Co., Inc.)
420 Lexington Ave. New York 17, N. Y.

Speed and economy are more important than ever in these uncertain times. That's why Robt. E. McKee General Contractor, Inc., is using 8 Whiteman Power Buggies to pour 51,000 yards of concrete and rocklite on the big Statler Hotel project in Los Angeles. One Power Buggy does the work of six men with wheelbarrows... speeds concrete, sand, brick or mortar over soft earth, up 25% grades, to upper floors, over light scaffolds, through doorways. Carries 12 cu. ft. or 2,000 lbs., yet weighs only 692 lbs. Positive "in-gear" control permits partial or full dumping and return. Travels up to 16 mph. Powered by 7.5 hp, 4-cycle, air cooled engine, has automatic clutch and speed changer. Dependable performance and durability proved over many years. Priced to pay for itself in a short time.


Climbs 25% grades with ease.

Positive "in-gear" mechanism of dump and return.

Also available with dumping stake-type body.

Whiteman Power Buggy

SEND NOW!

WHITEMAN MANUFACTURING CO.
3249 Casitas Ave. Dept CE. Los Angeles 39, Calif.
Please send me name of distributor, literature and prices on Whiteman Equipment.
Name_____
Company_____
Address_____
City_____ Zone____ State____

Calcium Treatment Lowers Blading Costs

(Continued from preceding page)

different roads. Dry densities varied from 139 to 155 pounds per cubic foot, with an average of 146. According to Mr. Baylard, these results compared favorably with previous tests which showed an average of 150 for similar surfaces.

Traffic counts were taken at 14 locations on a Saturday between 6 a. m. and 6 p. m. A 24-hour count was then calculated by using a standard factor of 1.64. The roads carried from 41 to 216 vehicles per day with an average of 107. Although the greatest gravel loss was shown by the road with the highest traffic count, Baylard reported that the study revealed no direct relationship between gravel loss and traffic density.

Subsoil and Weather

Subsoil studies of Onondaga County showed the existence of a silty loam varying from a fine sand silt to a gravelly silt. Soil classifications indicated a variation between A-1 and A-7, with a maximum group index of 8 and an average group index of 3.

Located in north-central New York State, the area lies in the path of storms moving out the St. Lawrence Valley. The average precipitation of 35.5 inches is usually well distributed over the year. The average temperature is 60 degrees and the average humidity 71 per cent.

Maintenance

Maintenance starts in the spring when the roads are still wet from the heavy rains. Sometimes only a light honing to smooth the surface is necessary. When reshaping is required, however, a grader makes several passes carrying material out from the center and then back again to assure proper crown and a smooth riding surface.

After all blading, flake calcium chloride is spread at the rate of ¾ pound per square yard. During the summer and fall months, two or three light honings are made without disturbing the consolidated surface. A second calcium-chloride application is made in the fall.

Prior to 1950, the County used a standard lime spreader for applying its chloride. Since then, however, a Highway Equipment Co. Model E spreader has been used; it covers the 20-foot surface in a single pass and spreading with this unit costs $13.25 per mile.

Cost Comparison

The final results of the investigation were matched with performance records of untreated-gravel roads to make a cost comparison. Figures were taken from studies conducted by the University of Michigan between 1935 and 1938 on untreated-gravel roads carrying about 400 vehicles per day. These studies revealed an average yearly loss of 72 cubic yards of gravel per 100 vehicles per mile. The 1951 Secondary Roads Committee test reported a loss of about 23 yards. On this basis, Baylard concluded that 50 yards at about $1.00 a yard had been saved by calcium-chloride treatment.

An even larger factor, he added, was the saving of blading costs. Assuming it would be necessary to make 30 bladings a year on an untreated road, he estimated an annual saving of 25 bladings at $9.00 each. These two figures—$50 on gravel and $225 on blading—total a $275 saving. The treating cost he listed at $210, indicating an over-all saving of $65 per mile per year over untreated roads.

Baylard also mentioned the stability and safety of treated roads, and pointed out that they serve as excellent bases for bituminous or concrete surfaces.

Road Federation Meeting

A World Meeting of the International Road Federation will be held May 13 to 16 in Washington, D. C. Representatives of some 35 countries plan to attend.

100% Self Contained
SYNTRON
GASOLINE HAMMERS

The Syntron PB-51 Paving Breaker's more than 2000 fracturing blows per minute with the explosive energy of gasoline and new, heavy piston that adds 50% more fracturing power to each blow, reduce job-time and job-fatigue; do a better job than laborious hand methods.

Greater Fracturing Power

New PB-51
PAVING BREAKER
Over 2000 Blows Per Min.

Ruggedly constructed to stand rough, severe service — runs cool, not affected by weather.

Simple Design — Permits easy dismantling for cleaning and inspection in a few minutes.

Low Initial Cost — 100% Self Contained, Syntron Gasoline Hammers do not require expensive auxiliary power equipment such as air compressor, hose and accessories

Low Maintenance Cost — No batteries to run down; no springs to fatigue and break — the striking piston is a free piston actuated by the explosive pressure of gasoline.

Low Operating Cost — One man operation . . . easily handled by any one workman . . . no crew necessary — consumes about 2 qts. low test fuel per hour under continuous running.

New RD-51
ROCK DRILL
Drills Rock up to 20" Per Min.

Easy to Start — Simple, pull rope starter same as outboard motors . . . dependable — summer or winter.

Extremely Portable, compact design and absence of auxiliary power equipment permit car-trunk hauling and one-man operation.

Faster Drilling Speed

The Syntron RD-51 Rock Drills high torque rotation of the drill bit; plus continuous exhaust gas pressure cleaning of the hole, down to a depth of 18" to 24", provides for fast, easy drilling at rates of up to 20" per minute.

Write Now For Your Free Copy
SYNTRON GASOLINE HAMMER CATALOG FOLDER

SYNTRON CO.

227 Lexington Avenue Homer City, Pa.

PERMITE
CONCRETE CURING COMPOUNDS

widely used on important projects

because...

they meet or exceed the specifications of most States and Counties, the Corps of Engineers, U. S. Army, the Department of the Navy, and other Federal Agencies. On airfields, flood walls, highways, and other great engineering projects all over the Nation, Permite proves its superiority.

PERMITE
CONCRETE CURING COMPOUND

ALUMINUM INDUSTRIES, Inc.
Cincinnati 25, Ohio

✔ IN COVERAGE
✔ IN PROPER CURING
✔ IN LOW COST

Permite Concrete Curing Compound is supplied in three different types to meet the special requirements of all jobs. Write for catalog data and name of nearest distributor.

● DISTRIBUTORS IN MAJOR CITIES FOR QUICK SERVICE.
A Few Good Distributor Territories Open

WISCONSIN-Powered
"BULL MOOSE"
TRACTOR

POWER TO FIT THE MACHINE — POWER TO FIT THE JOB

With blade tilted and angled for ditching, this "Bull Moose" track tractor, built by Canadian Mobile Co., North Vancouver, B. C., is all set for a rugged workout. A V-type 4-cylinder Wisconsin Heavy-Duty AIR-COOLED Engine delivers plenty of power for "what it takes" to handle the job in any weather, under just about any working conditions.

Note the compact installation of the power unit. V-type engine design permits a short crankshaft and minimum overall height. Crankshaft rides on Timken tapered roller bearings at both ends to take up radial and end thrusts, providing fullest protection against bearing failures — typical of Wisconsin heavy-duty design throughout on all models . . . single cylinder, 2-cylinder and V-type 4-cylinder, 3 to 30 hp.

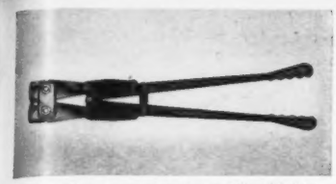
Specify "Wisconsin Power" for YOUR equipment.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

A 7036-14

Use the Request Cards Between Pages 16 & 17 To Obtain Further Information or Printed Matter on Any Product Advertised or Described Editorially in This Issue

Use the Request Cards Between Pages 16 & 17 To Obtain Further Information or Printed Matter on Any Product Advertised or Described Editorially in This Issue



Reversible jaws give the cutting blades of this Manco bolt cutter double their usual life.

Portable Bolt Cutter

A mill-type portable bolt cutter is announced by Manco Mfg. Co., Bradley, Ill. It features reversible jaws which permit cutting blades to be reversed for longer life. The blades may be re-sharpened when necessary. The manufacturer guarantees the drop-forged steel handles of the cutter against breakage.

Capacity of the Model 30-MCC cutter is ½-inch-diameter bolts or ⅜-inch-diameter steel rod. An eccentric head strap and fulcrum bolts maintain tension for easier action. Adjusting sections are said to require one wrench for quick adjustment. Handle assembly, cutter-head assembly, and jaws pairs are interchangeable with standard 30-inch bolt cutters.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 841.

New Stand-By Light

An automatic stand-by light with a glass-jar rechargeable battery and a visible ball-float hydrometer is offered by Carpenter Mfg. Co., Boston 45, Mass. It supplies emergency light instantly when fuses blow or power fails.

Electrical components including relays, transformers, and battery chargers have been specially engineered for stand-by duty. The battery has heavy pure-lead plates, hard-rubber separators, patented leakproof terminals, and automatic filling control. A built-in trickle charger maintains specific gravity between emergencies and a built-in fast charger restores the battery for the next emergency.

A choice is offered of floodlights or sealed-beam lamp heads, and either conduit-connection for permanent wiring or cord and plug attachment for semi-portable installation. Lamp heads are removable for remote mounting.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 840.

When fuses blow or power fails, the Watchmaster supplies emergency light. The unit is specially engineered for stand-by duty.

Preventive maintenance is more essential than ever, so check your equipment regularly.

PCA Vice President

Carl D. Franks takes over the newly created post of Executive Vice President of the Portland Cement Association, Chicago, Ill. Mr. Franks, who has been with the PCA since 1916 and, from 1948 until his present appointment, was Vice President for Promotion, of the Association, will assume such new duties as taking the President's place during his absence and fulfilling such assignments as may be given him by the President or Board of Directors.

The death of Frank T. Sheets last November left a vacancy in the PCA Presidency which has not yet been filled.

Riggers PLAY IT SAFE on "high wire" jobs!

. . . that's why they demand GENUINE

CROSBY CLIPS

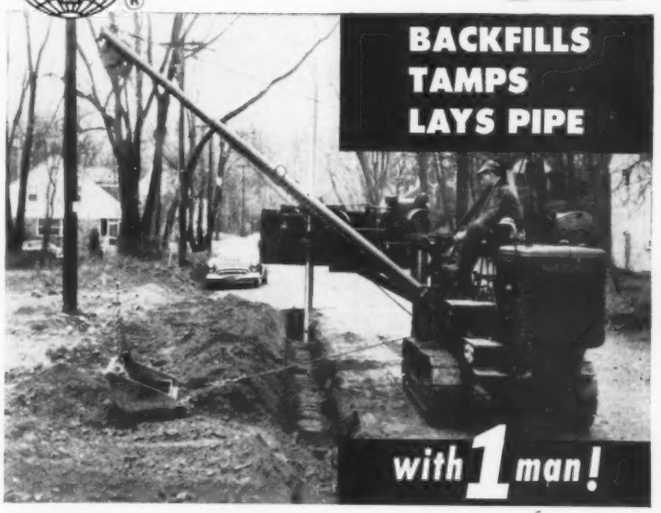
Drop-forged, hot-dip galvanized wire rope fasteners

SIZES FOR ¼" TO 3" WIRE ROPE

DISTRIBUTORS EVERYWHERE

AMERICAN HOIST & DERRICK CO.
ST. PAUL 1, MINNESOTA

THE CLEVELAND 80



Tops for water, gas, sewer, telephone and power lines — leak clamp openings — highway and airport drainage . . .

LOOK AT THESE ADVANTAGES

- One-man operation — cuts labor cost, cuts need for air and hand tools.
- Fills — as it tamps — as it travels — 24 speeds in either direction.
- Backfills from either side of trench — fast, clean and smooth.
- Tamps from side or straddling trench — delivers 380 foot-lb. blow 45 times each minute.
- Lays pipe—pulls sheathing—sets valves—handles headache ball, etc.
- More maneuverable — fewer traffic hazards — better public relations.

Filling—tamping—traveling simultaneously.

Laying 8" main and pulling crossings.

No jockeying into traffic lanes here!

For complete information on the **CLEVELAND 80** see your local distributor or write for this fully illustrated folder of facts and specifications.

THE CLEVELAND TRENCHER CO.
20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

NOW . . . You can choose the RIGHT Masonry Drill Bit for EACH Job . . . *by using this handy Guide*

NEW-FREE

Send for your copy TODAY

Easy to use. Practical. Locate material you want to drill and hole size. There you will find bit recommended. Our complete line of masonry drill bits (Cyclo-twist, Cyclo-Core and Thunderbolt) will drill ANY size hole in ANY masonry material.

New England Carbide TOOL CO., INC.
60 BROOKLINE STREET, CAMBRIDGE 39, MASS.

BORINGS & ROCK HOLES

Test Borings, Diamond and Shot Drilling, Inclined Holes, Calyx Drilling for Foundations, Elevators, etc.

GILES DRILLING CORPORATION
2 Park Avenue
Dept. C New York 16, N. Y.
Tel: LExington 2-6834

TAL Hydraulic Portable Pipe and Conduit Benders: ⅜" to 4"

Bend Pipe Cold

Other Equipment:
Tube Benders 1" to 3"
3-in-1 Copper Tube Bender ¼", ⅜", ½"
Thinwall (EMT) and Rigid Conduit Bender ½", ¾" 180° Bender
Mechanical 180° Tube Bender

AMERCO
Dept. B 1047 E. 76th Street Chicago 19, Illinois

Distributor Doings

Something New in Public Relations

Equipment dealers are becoming increasingly aware of the value of good public relations, and many of them are now running periodicals of their own. Northwestern Equipment, Inc., Fargo, N. Dak., has not only started a monthly newsletter but is sponsoring a radio program. The program, which made its bow under Northwestern sponsorship on February 4, features Fulton Lewis, Jr., well known news reporter, who speaks over station KVOX and the Mutual Network from Washington, D. C., each Monday through Friday at 6:00 p. m. Northwestern believes that its sponsorship of this news program will do much to make its services more widely known to friends and customers.

The monthly paper the distributor started last December is called "Northwestern News" and has as its object the helpful exchange of ideas and news items between the firm's contractor customers. A special feature of the paper is "Contractor of the Month", a one-page story taking as its subject a different contracting firm each month.

Two Agents for Cleaver-Brooks

Cleaver-Brooks Co., Milwaukee, Wis., manufacturer of boilers, generators, and allied equipment, announces the appointment of two new agents. The firms are E. C. Giberson, 3719 Center St., Des Moines, Iowa, whose territory covers 29 counties in Iowa, four in Missouri, and one in Illinois; and The Wilson-Weesner-Wilkinson Co., 310 S. 2nd St., Nashville 6, Tenn., which will handle a territory including 37 counties in Tennessee and 26 counties in Kentucky. Wilson-Weesner-Wilkinson has been serving as a distributor of Cleaver-Brooks Road Machinery Division equipment only. Its Sales Manager is W. D. Kerrick.

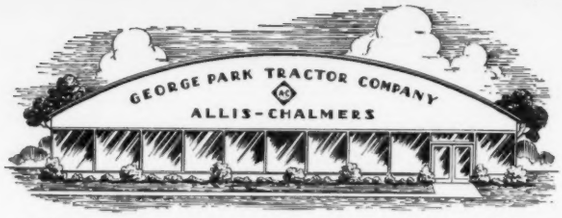
Carver Pump Appoints Four

Carver Pump Co., Muscatine, Iowa, manufacturer of self-priming centrifugal pumps, announces the appointment of four new distributors to handle its equipment: in lower Michigan—Miller Equipment Co., Grand Rapids and Detroit; in western Pennsylvania—A. T. Green Machinery Co., Pittsburgh; in northern West Virginia—General Equipment Co., Clarksburg; in western Washington and northern Idaho—Blackwell-Coleman Equipment Co., Spokane.

George Park Tractor Expands

George Park Tractor Co., Macon, Ga., has moved into a new building at the intersection of Guy Paine Road and Pio Nono Avenue. It contains 10,400 square feet of floor space and there is ample room for future expansion.

George Park Tractor is dealer in south Georgia for Allis-Chalmers Mfg. Co., Milwaukee, Wis. It also handles the Terra Cobra scraper and other Wooldridge equipment; Unit track-type and rubber-tired shovels, cranes and draglines; Manitowoc heavy-duty cranes and shovels; Davey air compressors; Thor pneumatic tools; Gilson concrete mixers; and Cedarapids equipment. In accordance with its motto, "We Service Everything We Sell", the firm maintains a staff of trained mechanics, as well as a large stock of spare parts and servicing equipment.

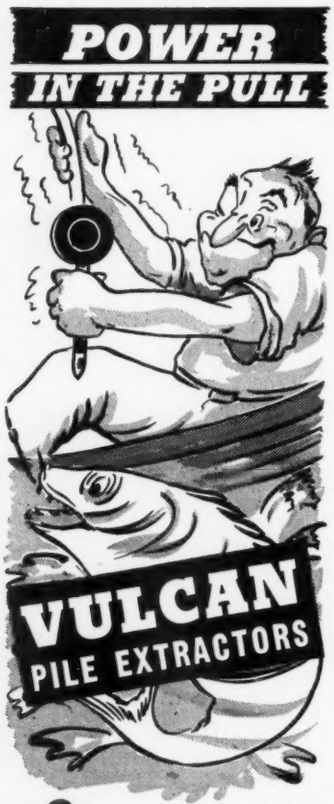


George Park Tractor Co.'s new building in Macon, Ga., is of brick, concrete, and steel construction and contains 10,400 square feet of floor space. Its location on an 8½-acre tract leaves ample room for future expansion.

Tries Top-Flight Selling

Another manufacturer has become air-minded. Baughman Mfg. Co., Inc., Jerseyville, Ill., maker of spreaders, conveyors, and special truck bodies, first took to the air in 1948 at the instigation of Jim Cadle, Production Manager. Now Cadle and Sales Manager David Gray report that the company's Cessna 170 planes are giving excellent results. Baughman currently has three flying salesmen, three others learning to to fly, and its own 1,800 x 100-foot landing strip alongside the plant.

(Continued on next page)

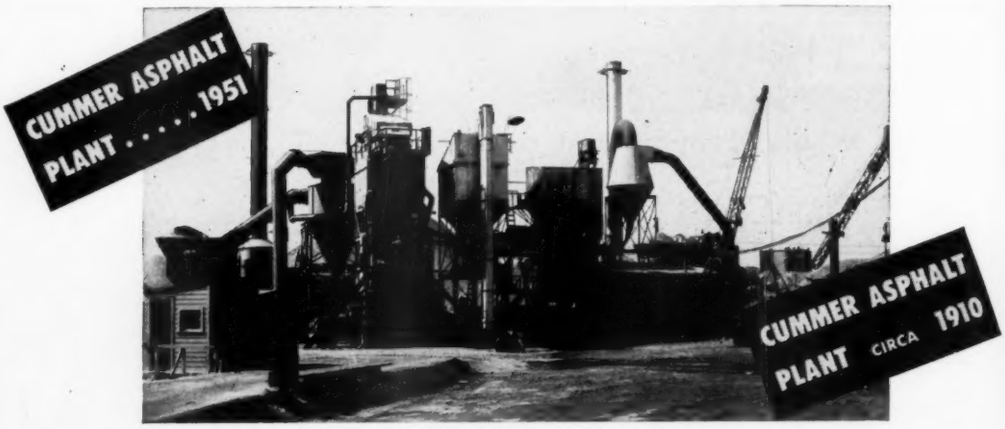


Extracting piles is certain and automatic with the plus power produced by the Vulcan Pile Extractor. All claims made for its efficiency, durability, speed and economy have been justified through two decades of heavy duty service on the job.

This compact machine, designed for pulling sheet steel, wood, concrete, H-beam and pipe piles, has only one moving part, requires no adjustments and can't get out of order. It's built in three sizes to handle any pile extracting job—No. 200 for pulling less difficult piles, No. 400 for heavier jobs, and No. 800 for extracting the heaviest, longest and most difficult piles. Write today for complete details on the rapid, dependable action of the Vulcan Pile Extractor.

VULCAN IRON WORKS Since 1852
329 North Bell Avenue
Chicago 12 ---Illinois

SEACO CHALLENGE
AC
SEACO
TRADE MARK
DC
SEACO
Hard-Surfacing
WELDING ELECTRODES
Last Longer than More Expensive Brands
• A single pass of SEACO allows parts to work-harden and last longer.
• SEACO Hard-Surfacing Welding Electrodes resist impact and abrasion.
• Repairs made with MANGANAL and protected by SEACO often outlast new parts.
• SEACO gives more for the money—5% coating—95% metal.
ORDER SEACO TODAY
Write TODAY for FREE Literature on SEACO! Nearest Distributor Upon Request.
Try a 50 lb. box of SEACO. If it doesn't do everything we say . . . return the unused portion to us for an immediate refund.
STULZ-SICKLES CO.
SOLE PRODUCERS
92 N. J. Railroad Ave
Newark 5, N. J.



"Twin plants . . . We call them Grandpa and Son . . ."

In such words does Harold Thompson of Cooke Contracting Co. describe their efficient, profit making twin plant set-up at Centerline, Michigan. Daily, these two Cummer Plants turn out peak production that more than meets the rigid state specifications. The new plant has a capacity of 1,000 tons a day.

The 40 year old Cummer Plant has a 500 tons per day capacity . . . one ton mixer . . . belt and sprocket driven . . . vibrating screen has been added. Notice common dust bin. This is positive proof that Cummer Asphalt Plants give you continuous, high, efficient production. Write for catalog.

THE F. D. CUMMER & SON COMPANY • CLEVELAND 14, OHIO

BUILDERS OF FINE ASPHALT PLANTS SINCE 1895

Pilot-Salesman Bruce Walsh, Sales Manager David Gray, and Production Manager Jim Cadle do the work of nine in Baughman's Flying Salesman setup.

Though operating costs of the planes come to just about the same as those on company cars, there is an immense saving in time. Mr. Gray reports that the men in a Cessna make three times as many calls as they did under the old arrangement; and transportation of important customers and prospective customers to and from the plant without delay often results in the closing of a "hot deal". Baughman has not found weather a deterrent; in one year (1949) only five flying days were lost because of unfavorable conditions.

Adams Owns Cunningham-Ortmayer

Henry J. Adams, Sales Engineer for Iowa Mfg. Co., Cedar Rapids, Iowa, resigned his position on February 15 in order to assume the ownership and operation of Cunningham-Ortmayer Co., 1229 S. 41st St., Milwaukee, Wis. As a new distributor, still operating under the name of Cunningham-Ortmayer, Mr. Adams will continue to handle leading lines of construction and road-building equipment and his territory will cover the entire state of Wisconsin. In addition to its headquarters in Milwaukee, the firm has a branch in Green Bay, Wis.

Henry J. Adams, new owner of Cunningham-Ortmayer in Wisconsin.

Globe-Trotting Service School

A 42,000-mile trip covering 11 countries was the 1951 contribution of R. G. LeTourneau, Inc., Peoria, Ill., to the service personnel of its distributors scattered around the world.

Starting in February, 1951, the two-man team from LeTourneau's Export Department—R. L. Wollberg, Educational Program Manager, and Max Loertscher, instructor—visited, in the following order: Staines (England); Casablanca (French Morocco); Bombay (India); Calcutta (India); Bangkok (Siam); Karachi (Pakistan); Johannesburg (Union of South Africa); Elisabethville (Belgian Congo); Rio de Janeiro (Brazil); Sao Paulo (Brazil); Santiago (Chile); Bogota (Colombia); and Mexico City (Mexico). The last school took place in late December—each school having lasted two weeks.

The instructors divided each school into two parts. The first week was devoted to the mechanics and theory of the LeTourneau electric system used on dozing and hauling equipment. The second week took care of the mechanical functions of the machinery. Important in illustrating the lectures were more than 200 slides, as well as various parts such as generators, electric motor, transmission clutch, and gear box.

(Continued on next page)

At the National Ready-Mixed Concrete Association's meeting in Chicago, Chain Belt Co. ran a contest to name its new Moto-Mixer. John Knudsen, Knudsen Concrete Products, Dwight, Ill., hit the jackpot with "Adjusta-Wate" and won two Moto-Mixers Here he is (paper in hand) next to George Hartley, Highway Equipment Co., Rockford, Ill., winner of the salesman's $1,000 prize. Left and right: Robert Horton, Chain Belt, and B. O. Eighmy, Eighmy Equipment.

Only ROGERS TYPE "TPG" Power Lift
DETACHABLE GOOSENECK

...gives you
TRANSPORTATION
plus...
LOAD MANIPULATION

Stoops to clear low overhead obstructions.

Raises its deck to clear high banked crossings.

The unique deck raising and lowering feature of this Rogers trailer makes load manipulation a distinct advantage under many hauling conditions.

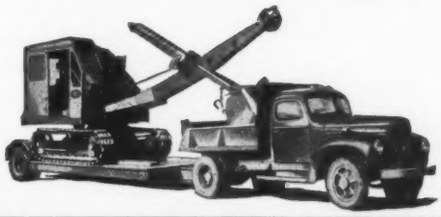
Low bridge or high road bed obstacles are easily overcome. Deck is raised or lowered to alter overall height of load for overhead clearance. Raising deck clears high road beds.

Write for literature and full particulars or call your nearest agent.

THE ROGERS Power Lift DETACHABLE GOOSENECK CAN BE OBTAINED ON ANY STANDARD ROGERS DROP DECK TRAILER

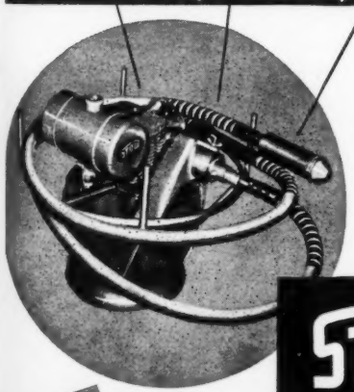
EXPERIENCE builds 'em — PERFORMANCE sells 'em

ROGERS BROS. CORP.
ALBION, PENNA.



Also of timely interest is this ROGERS Tag-A-Long trailer which makes a dump truck serve as a tractor and effects sizable savings for contractors.

proven efficiency!
proven dependability!
proven on-the-job economy!



Thousands of STOW vibrators the country over are proving their value every day . . . proving their efficiency by making possible quick, perfect placement of stiff mixes . . . proving their dependability by working hour after hour, day after day under the most rugged conditions without time-losing breakdowns, without expensive maintenance.

Write today or see your local distributor for a copy of STOW BULLETIN 511 and complete details on STOW concrete vibrators and screeds.

STOW GASOLINE AND ELECTRIC VIBRATORS
STOW MANUFACTURING CO.
40 Shear St., Binghamton, N. Y.

Distributor Doings

(Continued from preceding page)

The lecturers used charts to point out electrical circuits, fuel systems, and the air-line setup, and question-and-answer periods at frequent intervals were helpful.

The native tongues of the people visited included English, French, German, Spanish, Portuguese, Italian, Siamese, Indonesian, Urdu, and Hindustani. English, the most widely understood language, was used for lectures at each school, but Mr. Loertscher's fluency in French, Spanish, and German was also called upon when need arose. When the students spoke only less well known languages, information was given to interpreters in a language they could understand, and they in turn translated it for the men concerned.

This map gives an idea of the distances covered by LeTourneau's Bob Wollberg and Max Loertscher when they took their service school around the world last year. Triumphing over 10 languages, they got their information through to equipment distributors in 11 countries.

Special books were designed and assembled in Peoria especially for this tour. The left-hand pages carried illustrations, and the right-hand pages were blank so that each student could take notes in his own language. Thus, at the end of the school, everyone had a notebook in his own language.

Forty-two nations were represented by men attending the 14 schools, the total number in attendance being 359. All who completed the course were awarded certificates testifying that they had received instruction in the LeTourneau Service Training School.

Sold Idle Wagons, Started Firm

In 1899 a young man in Arizona landed a job as bookkeeper in a hardware firm. But it wasn't long before the company went bankrupt and the new job slid from under Cyril S. Gilbert's feet. Mr. Gilbert thought again. In the course of his investigation he discovered that a carload of marketable farm wagons which had been consigned to the bankrupt firm was still awaiting disposal on a railroad siding. It would be nice if he could acquire and sell them; the only snag was that he didn't have the money to buy them. But it so happened that another former employee of the bankrupt company, Charles H. Pratt, had also been struck by the wagon idea. They teamed up and soon found enough financial backing to enable them to rescue the stranded wagons and set up shop in a small adobe building. After that, all went well for the enterprising pair: the wagons sold readily and the partners used the profit to purchase more. As time went on, farm implements and other items were added to their stock, and the flourishing little store branched out into new quarters.

Since those early days, Pratt-Gilbert Hardware Co. has moved or enlarged its facilities four different times, and its present location at 701 S. Seventh St., Phoenix, acquired in 1930, has also been expanded. It comprises a 10-acre tract with warehouse and office buildings that provide 30,000 square feet of floor space. Included in the list of manufacturers whose equipment Pratt-Gilbert handles are: Air Reduction Pacific Co.; Browning Mfg. Co.; Hewitt Rubber Division; A. Leschen & Sons Rope Co.; Smith Welding Equipment Corp.; Timken Roller Bearing Co.; Van Dorn Electric Tool Co.; Wisconsin Motor Corp.; and Yale & Towne Mfg. Co.

Cyril S. Gilbert, co-founder of the firm, is still its active President. Ed Gollwitzer, 25 years with the company, is its General Manager. In October, 1949, Pratt-Gilbert celebrated its golden anniversary with an open house and industrial show, at which more than 1,000 guests viewed an impressive array of construction equipment and took part in the presentation of gifts and awards to members of the firm with long service records.

Cyril S. Gilbert, President and co-founder of Pratt-Gilbert Hardware Co., Phoenix, Ariz. His firm had its golden anniversary two years ago.

"Tag Master"

"Tops" in Bucket Control

As your clamshell "flies through the air with the greatest of EASE," watch the eyes of the "sidewalk superintendents" POP!

You, too, will be delighted with the EASE with which you *cast* the clamshell, or *snub* it, or *twist* it, getting into hard-to-reach corners and picking up hard-to-manage rocks.

You'll find the tagline pull *uniform* at all bucket levels and *adjustable* to fit any job.

In addition you can use your TAG-MASTER as a *dipper-trip!*

Some of these advantages YOU NEVER HAD BEFORE . . . unless you have already used a TAG-MASTER!

For more details about this combination tagline winder and dipper trip, mail the coupon below.

MORIN MFG. CO., INC.

WEST SPRINGFIELD, MASS.

Please send "Tag Master" details to—

Name .....

Address .....

Make—Size & Model of Machine

INGERSOLL SHOVELS

...Edges won't split or curl!

We guarantee this if you make sure to specify . . . INGERSOLL SHOVELS

The Special Tillage Steel, known as TEM-CROSS, used in the manufacture of all Ingersoll Shovels, was developed in our own steel mills. By cross-rolling and special heat-treating, we give this steel an interlocking, mesh-grain structure that resists splitting.

All Blade Finishes remain Black finish, except Shovels and Spades in Alloy, A and B Grades, which may be furnished with face polished and velvet back, or full polished.

Inquiries are invited

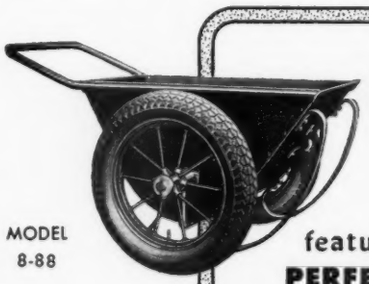
INGERSOLL STEEL DIVISION

Borg-Warner Corporation

New Castle, Indiana

INGERSOLL SHOVELS

"A Borg-Warner Product"



JACKMANCO

REG. U. S. PAT.

MODEL 8-88

CONCRETE CARTS feature **PERFECT BALANCE** and **ROCKER DUMP**

All models are easy wheeling and turning. Many models to choose from. Available at your local dealer.

These blue beauties are made with pneumatic tired wheels. Drop axle.

Bodies are flanged, riveted and welded to prevent opening at seams. Capacity from 6½ to 9 cu. ft.

Ask for Jackmanco and be sure.

The Oldest and Largest Wheelbarrow Maker in America

Superior Products Since 1876

JACKSON MANUFACTURING CO.

HARRISBURG • PENNSYLVANIA

Distributor Doings

(Continued from preceding page)

Klondike Cutie Cutting Up With Newly Named Hand Saw

The accompanying photo sent to us by a dealer proves he isn't afraid to give "bear" facts about his product. Belsaw Machinery Co., of Kansas City, Mo., points out that even a fuzzy Klondike apparently has little difficulty manipulating this all-purpose hand saw that also serves as a square, level, plumb, ruler, straightedge, and protractor, and even makes incision cuts.

Incidentally, it is now called the Mathometric layout hand saw, and is manufactured by the renamed Mathometric Saw Co., 147 Genesee St., Auburn, N. Y. The previous name was Geometric Saw Co.

Belsaw advises that any similarity between the fur-coated gentleman in the picture and any of its customers is purely coincidental.

He hasn't joined the carpenter's union yet, but he looks proficient with that Mathometric saw. Belsaw Machinery Co. is his favorite dealer.

Dealerships for Warning Sign

Dealerships are now available for the A-standard traffic warning sign manufactured by Eastern Metal of Elmira, Inc. The unit consists of an angle-iron frame which supports a free-swinging sign and two removable danger flags. Those interested in a dealership may contact Burleigh M. Names, Sales Manager, Eastern Metal of Elmira, Inc., Elmira Heights, N. Y.

Kentucky Dealer Elects Two

J. L. Anderson and J. B. Buren were recently elected vice presidents of the Roy C. Whayne Supply Co., Louisville, Ky., distributor of Thor portable power tools. Mr. Buren, who has been with Whayne since 1928, is Manager of the firm's Evansville, Ind., branch; and Mr. Anderson, Manager of the Paducah, Ky., branch, joined Whayne in 1935.

Cummins Has New Outlet in Iowa

Cummins Diesel Sales Corp., University and Illinois Sts., Des Moines, Iowa, is a new outlet for the sales and service of Cummins diesel engines, manufactured by Cummins Engine Co., Inc., Columbus, Ind. James M. Gleason, former Senior Salesman at the Cummins Chicago dealership, is Acting Branch Manager of the new office, which will operate as a branch of Cummins Diesel Sales Corp., Omaha, Nebr. The Omaha firm will continue to serve customers in western Iowa, while the Des Moines branch will cover eastern and central Iowa, with the exception of Scott County. L. H. Hanlon is in charge of the office and parts departments of the Des Moines

(Concluded on next page Col. 3)

Raymond H. Snyder (right) has bought several assets of the Chicago operation of Cummins Diesel Sales Corp., and operates independently as Cummins Illinois Sales Inc., Chicago. Welcoming him to Cummins dealership are L. W. Beck (center), Cummins Engine Co. Vice President; and R. P. Meehan, Watson & Meehan of San Francisco.

DAREX AEA

used in more concrete construction than any other

Air Entraining Agent

80,000 masonry units made from Darex AEA concrete were used in the construction of the $1,425,000 "Stampede Corral" in Calgary, Canada.

Architect: Mr. John Stevenson
Contractors: Bird Construction Co., Ltd.
Dimensions: 253 x 416 ft.
Seating Capacity: 6,666 opera seats
Standing Room: 2,500

● In the manufacture of concrete blocks, production is increased through the use of DAREX AEA because green breakage, culls . . . web and other cracking . . . are eliminated. In concrete masonry products, as well as in field concrete, there is solid proof that air entrained concrete, with *air content closely controlled* by DAREX AEA is more workable, more durable. Throughout the world Darex AEA is used in more concrete construction of *all* kinds than any other air entraining agent.

Ask your supplier, or write us for details.

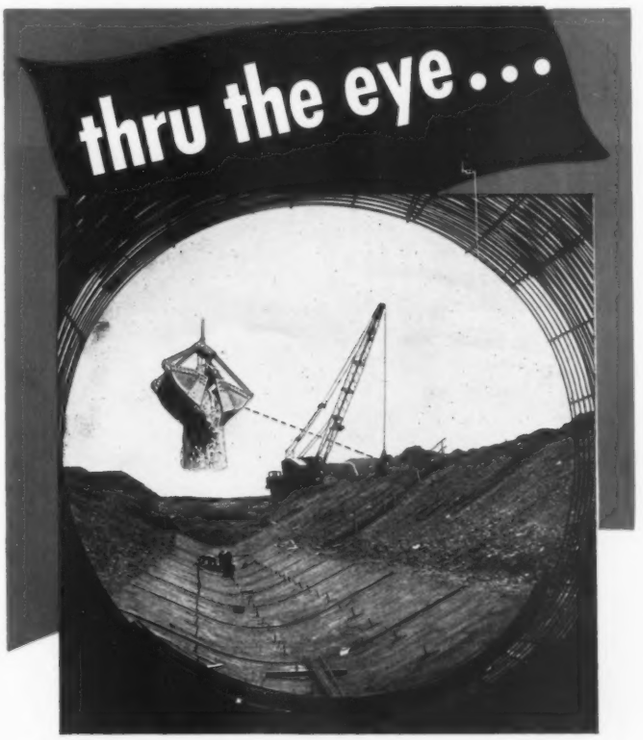
D A CONSTRUCTION SPECIALTIES DIVISION

DEWEY and ALMY Chemical Company

Cambridge 40, Mass.

Chicago 38 • San Leandro, Calif. • Montreal 32

thru the eye . . .



of a Culvert, a Contractor, or an Operator an OWEN BUCKET *"looks good"*

To a practical person looking out of a culvert such as this one, comes the suggestion of exceptionally great and economical digging ability or an Owen Bucket wouldn't have been selected.

To the contractor it recalls consistently good performance for years which has prompted him to reorder Owen Buckets year after year.

To the operator comes a reminder of how an Owen Bucket performs under varying difficult conditions, responding to his every demand and "stands up" with outstanding ability long after many buckets would have been relegated to the scrap heap.

"A mouthful at every bite"

BUCKETS AND GRAPPLES

Write for Catalog

THE OWEN BUCKET CO.

4030 Breakwater Avenue • Cleveland, Ohio

Branches: New York, Philadelphia, Chicago, Berkeley, Calif.

LET **GARRISON**

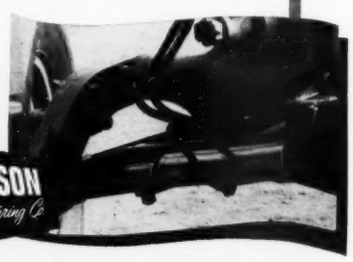
Hydraulic Boosters

SUPPLY THE STEERING POWER FOR HEAVY-DUTY ROAD EQUIPMENT

With Garrison Boosters hydraulic power takes over the work of steering! Drivers work faster, get more done per hour with less fatigue! Operating costs go down! Equipment lasts longer!

Finger tip control through hydraulic power steering makes it easy to maneuver in cramped quarters, reduces steering accidents in off-highway operations.

Put power steering to work for *you*. Your maintenance crew or shop can easily install Garrison Hydraulic Boosters on your road equipment today. Contact your dealer or write for information.

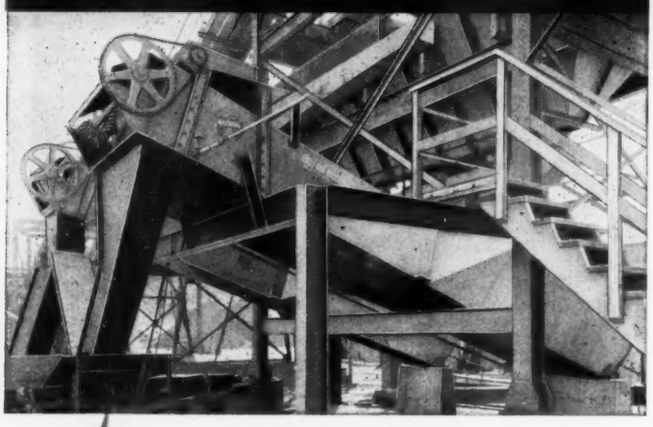


Garrison Hydraulic Steering Valve and Power Cylinder Installed on an Allis-Chalmers AD-3 Motor Grader.

GARRISON Manufacturing Co.

1500 SOUTH SANTA FE AVENUE • LOS ANGELES 21, CALIFORNIA

IT'S "IN THE BAG" AT STANDARD SLAG



STANDARD SLAG CO., Youngstown, Ohio, operates several sand and gravel plants using Eagle Washer-Classifier-Dehydrators. But, they are justly proud — and so are we — of their Mantua, Ohio, plant shown here.

Wet screened fine material is fed to an Eagle Water Scalping Tank, equipped with automatic bleeding valves, which removes excess water, provides preliminary classification and retains desired volume of fines. Concentrated material is deposited in a dual collecting-blending flume. Rotating spouts on bottom of scalping tank are adjusted so that coarse sand, which quickly precipitates at the feed end, is spouted to one side of flume—in desired proportion.

The coarser product is flumed to a 57" x 22' Eagle Double Screw unit where it is washed, further classified as desired and discharged onto conveyor dehydrator. The finer sand is settled and bled to other side of flume and carried to a 29" x 22' single screw unit — two gradations of premium sand for a waiting market — an abundance of sand that meets the most rigid aggregate specifications. Send for the facts today!

EAGLE IRON WORKS 159 Holcomb Ave. Des Moines, Iowa

☆ Let Your Dollars Fight Polio ☆

Distributor Doings

(Continued from preceding page)

unit; and Joseph Boston heads the service department.

Industrial and Brown-Bevis Merge

Two Los Angeles distributors announced a merger last February. They are Brown-Bevis Equipment Co. and Industrial Equipment Co. The name of the new company thus formed is Brown-Bevis-Industrial Equipment Co. and its address is 4441 Santa Fe Ave., Los Angeles, Calif. The firm handles industrial equipment and road machinery.

Dealers in 3 States for Cleco

The Cleco Division of the Reed Roller Bit Co., Houston, Texas, manufacturer of air tools and accessories, has appointed the following dealers to handle its complete line of Cleco and Dallett tools: Arrow Supply Co., Inc., 3616 Liberty Ave., Pittsburgh 1, Pa.; Peerless Supply Co., 1118 Grand Ave., Des Moines 9, Iowa; and Bates Supply Co., 11 Vernon St., Quincy 69, Mass.

Lakeshore Machinery Handles Lima

The Lakeshore Machinery & Supply Co., 400 W. Laketon Ave., Muskegon, Mich., has taken over the distributorship of Lima shovels, cranes, and draglines manufactured by Baldwin-Lima-Hamilton Corp., Lima-Hamilton Division, Lima, Ohio. Lakeshore will cover the western half of the lower peninsula of Michigan for Lima.

Joy Appoints Kentucky Dealer

Wilson Machinery & Supply Co., 139 N. Mill St., Lexington, Ky., has been appointed distributor in the state of Kentucky for all construction equipment made by Joy Mfg. Co., Pittsburgh.

Dealership for Air Heaters

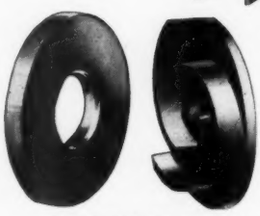
A limited number of dealerships are open for the oil-fired Eco-Temp heaters made by Arthur C. Baumann, 7011-21 Grays Ave., Philadelphia 42.

for the ... Complete QUALITY LINE *depend on* CARVER PUMPS

Model KN1½L 4000 G.P.H.

A COMPLETE LINE

Carver Self-Priming Pumps available in all sizes from 4,000 to 240,000 G.P.H. Gas, Diesel, Motor or Belt Drive. Also Diaphragm Pumps up to 6,000 G.P.H. Ask for Bulletin No. 110. Carver Pump Co., 1404 Hershey Ave., Muscatine, Iowa.



REPLACEABLE LINERS AND IMPELLERS

Sturdy, wear-resistant replaceable liners and impellers are standard equipment in all Carver Contractor Pumps. When wear eventually occurs you don't replace the entire costly casing, as in ordinary pumps. Simply remove and install a new liner, a new impeller if necessary, and new pump efficiency is restored at nominal cost.

Another Carver Quality Feature!

A QUALITY LINE

Quality is our strong forte — Every Carver Contractor Pump is designed and manufactured with one specific purpose in mind — to provide you with rugged dependable equipment, loaded with reserve power and stamina, to handle the toughest construction jobs. Nothing fragile about these pumps; no skimping on materials; no underpowering; no compromise of quality. Throughout their many years Carver pumps have earned an enviable reputation in the field for dependable, efficient and long-life service. We shall continue to build pumps that will perpetuate this reputation.

Specify Carver Contractor Pumps — your best buy for better performance.

CARVER PUMPS

Precast Test Piles Are Driven for Pier

Heavy Spud Jetted Down Through Tight-Packed Sand and Clay Of River Bottom to Start Holes for Piles

• AS the initial step in a $5,500,000 program for the improvement of the Port of Savannah, the Georgia Ports Authority is building a concrete wharf, steel-sheet-pile wharf bulkheads, fender systems, and other work incidental to a complete new 2,065-foot pier. Construction started a year ago this spring after Espy Paving & Construction Co. of Savannah was awarded a contract on a low bid of $1,791,639.70. This phase of the work is expected to be completed around the middle of this year.

The improvement program will completely modernize the Authority's docks and facilities on the 407-acre port property located a few miles upstream from Savannah, in the suburb of Garden City. The State recently acquired the land, warehouses, and other facilities from the Federal government. Frontage along the right bank of the Savannah River totals 4,328 feet. The port of Savannah is approximately 17 miles up-river from the Atlantic Ocean.

Laid out parallel to the shore line, the 2,065-foot dock will berth four of the largest cargo vessels at the same time. In addition, there will be three sheds, with a capacity of 74,000 square feet each, for temporary storage of freight in transit, with platform loading facilities for trucks. Parallel railroad tracks will be located behind the sheds and along the wharf. The existing warehouses, built originally by the Federal government, have 2,000,000 square feet of storage space. Adjacent to them is a 200-acre tract of land suitable for industrial development.

Pier on Piles

Robert & Company, Inc., architect and engineer of Atlanta, Ga., designed the pier, and is supervising the construction. The pier is 79 feet wide, including a 40-foot apron, and consists of a 2-foot 3-inch reinforced-concrete deck slab supported on precast reinforced-concrete piles. Altogether there are 1,972 piles in the structure, including 182 bents containing 10 piles each. Along the river side of the pier there is a steel-sheet-pile bulkhead.

Piles are octagonal in cross section, with a 19½-inch diameter, and vary in length from 40 to 62 feet. They were cast in a yard which the contractor laid out along the river front about ½ mile upstream from the job site. After the curing-out period the piles were loaded on barges and floated downstream to the pier for driving. Espy's commercial

(Continued on next page)

C. & E. M. Photo

Test piles for the Savannah pier were driven from a steel barge mounting a Clyde oil-fired Whirley with a 95-foot boom. The boom holds a 55-foot steel spud which will open up a hole in the river bottom for the pile.

EMBURY

The longer Burning Safety Lantern

No. 40R Traffic-Lord

. . . 100 hours of dependable warning light on a pint of oil.

Write: EMBURY MANUFACTURING CO. WARSAW, NEW YORK, U.S.A.

EMBURY LANTERNS & TORCHES

STURDILITE

The HEAVY-DUTY FLOOD LAMP THAT Lights Your Work Better . . . Gives Longer Service at Lower Cost

Vibration-absorbing Base

Specially Designed for Efficient Service on Shovels — Excavators — Drag-lines Roadbuilding Equipment Locomotive Cranes — Tractors

"BUILT to take it," say users of STURDILITE Heavy-Duty Flood Lamps, after years of trouble-free service. Hermetically sealed-beam lamp—no reflector to become tarnished. Complete assembly mounted on rubber cushioned base that absorbs vibration and shocks. Available in 6-8, 12-16, 24-28 and 110-120 voltages.

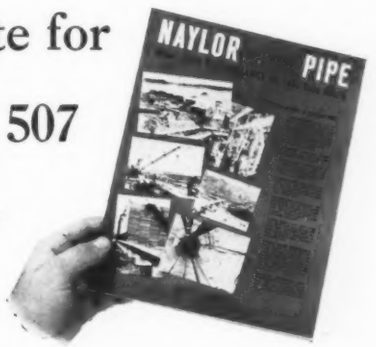
COMPLETE BULLETIN, specifications, and quantity prices sent promptly upon request.

Metal Spinning Division

PHOENIX PRODUCTS COMPANY

4727 N. 27TH STREET, MILWAUKEE 16, WISCONSIN

Contractors specify Naylor Pipe because its exclusive Lockseam Spiralweld creates a light-weight structure with extra strength and safety built in for heavy-duty service. Write for Bulletin No. 507 and see how many ways Naylor Pipe can serve you...



more effectively...

more economically.

NAYLOR PIPE

Naylor Pipe Company
1270 E. 92nd St., Chicago 19, Ill.
New York Office:
350 Madison Ave., New York 17, N.Y.

C. & E. M. Photo

The Whirley sets the pile vertically in the template. The steel triangle and two cables off its base keep the pile plumb while it is being set.

Precast Test Piles Are Driven for Pier

(Continued from preceding page)

transit-mix concrete plant in Savannah supplied the concrete for both the pile casting and the slab pour. The plant is located only 2 miles from the project.

There was nothing easy about driving these piles. Beneath a shallow layer of silt and river mud lay a stratum of fine, firmly packed sand that looked very much like cement and possessed similar properties of resistance. In addition to the sand there were also pockets of hard blue clay that proved difficult to drive through. C&EMonthly visited the job when test piles were being driven, and the typical operations that were observed at that time were fairly characteristic of the bulk of the pile driving that followed.

Starts Hole With Spud

Test piles were driven from a floating rig consisting of a steel-hulled barge measuring 96 feet long x 40 feet wide, with a 4-foot draft; on this barge was mounted a Clyde oil-fired Whirley equipped with a 95-foot boom. Holes in the hard river bottom were started for the piles by means of a heavy steel spud which was jetted down through the tightly packed sand and clay.

The spud was 55 feet long and consisted of two 12-inch H-beams placed side by side with their flanges butting together. They were fastened to each other by welding 6-inch plates across both the bottom and top flanges. In between the 12-inch sections ran a 10-inch H-beam, with its flanges welded to the webs of the larger members. Also carried on the inside was a 3-inch tube or jet pipe, ending in a 1¼-inch nozzle at the bottom of the spud which was built up with a saw-tooth cutting head to help penetrate the sand. The weight of the steel members totaled over 100 pounds to the foot, making the weight of the entire spud nearly 3 tons.

Through a combination of the heavy weight and the jetting, the spud made a hole for the pile down to within 2 feet of the desired grade. The pile was driven for the final 5 feet, and jetting was resorted to only when absolutely necessary. Piles were driven to 50-ton bearing with about eleven hammer blows to the inch, and averaged 15 feet of penetration below the river bed.

C. & E. M. Photo

A Vulcan No. 0 pile hammer goes to work, while an instrument man checks the number of blows per foot. His Gurley transit is trained on the feet-and-inches mark on the pile.

Powerful Jet

At the beginning, when the spud was being jetted into the sand, three 4-inch jet pumps were used, but without satisfactory results. So the contractor substituted for these a single Griffin 6-inch x 5-inch Model 330 DGM three-stage jetting pump powered by a GM 330-hp diesel engine. This unit, equipped with a 16-inch impeller, developed 300-pound pressure at 1,800 rpm in delivering 1,000 gpm to the jet.

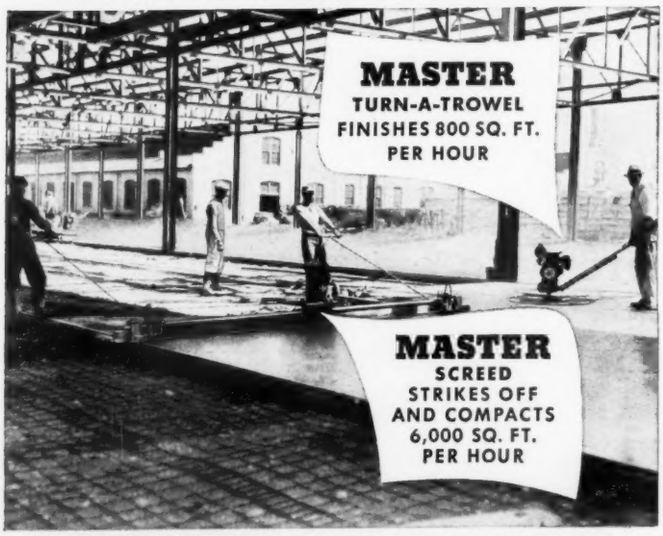
In jetting and driving, the barge was anchored at right angles to the shore, with the jet pump at the stern, out in the river, so it would take in only clear water. It delivered the water through a 4-inch hose to the 3-inch jet pipe in the spud, and so on to the 1¼-inch nozzle at the bottom.

After the desired hole was made by spudding and jetting, the Whirley lifted one of the test piles off the barge with a three-point pickup, and set it vertically in the template along the side

(Concluded on next page)

SuperFast

CONCRETE FLOOR FINISHING



ONLY MASTER OFFERS YOU QUALITY EQUIPMENT BUILT FOR THE JOB!

Only MASTER TURN-A-TROWEL provides quick change from wide compacting trowel to trowel finish . . . covers more area with more paste brought to surface for faster final finish. Broader trowels and heavier weight eliminate impacted air and give density to surface to eliminate shrinkage and cracking. Write for Catalog No. 939.

MASTER Universal Concrete Vibrator maintains a vibration speed over 9,500 R.P.M. in concrete.

MASTER VIBRATORY CONCRETE FINISHING SCREED strikes off and compacts without need for additional vibration. MASTER Standard Screed for flat surfaces, also MASTER Crown Screeds for circular or parabolic surfaces . . . all sizes. Write for Catalog No. 942.

MASTER VIBRATOR COMPANY • DAYTON 1, OHIO

MASTER

BETTER PRODUCTS FOR BIGGER PROFITS

Master Portable Generator Plants ½ KW to 100 KW | Master Vibratory Concrete Finishing Screed | Master Power-Blow Electric Hammer and Spade | Master Space Heaters | Master Gas or Electric Concrete Vibrators

SPEED FORMS

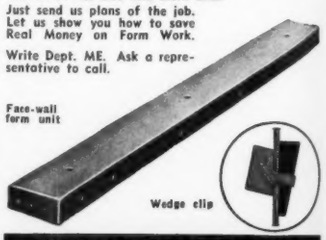
Cut High Labor Costs
Make Big Savings
You Don't Have To Buy New Forms For Every Job

SPEED FORMS can be set up, stripped, cleaned, moved and reused in far less time than wood. Lightweight, easy to handle. No heavy bracing needed. No gadgets or special fastenings—Units go together with wedge clips.

Made of Steel—Good for reuse again and again on job after job indefinitely without repair. Reduce material costs way below wood—Many records of 400-500 and more uses.

Just send us plans of the job. Let us show you how to save Real Money on Form Work.

Write Dept. ME. Ask a representative to call.



IRVINGTON FORM AND TANK CORP.
20 VESEY ST., NEW YORK 7, N. Y.

Fastest THROUGH CONCRETE

and YOU GET
MORE HOLES
PER DRILL
with **TERMITES**
(ask any TERMITE user)

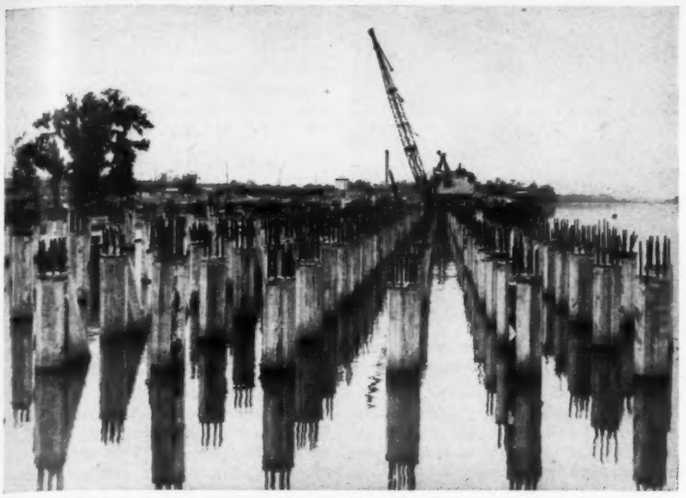
NO MASONRY TOO TOUGH . . .
Where ordinary drills fail, TERMITES *keep going* to give you today's fastest and lowest-cost masonry drilling! Here's why:

1. **TERMITES' *continuous* spiral worm, beginning at the grinding inserts, starts to carry away material the instant it is pulverized.**
2. **TERMITES' exclusive "WICTU" inserts last longer and cut faster.**

Use TERMITES on your next drilling job . . . they're engineered to give you "more holes per dollar." Diameters from ¼" to 5". Lengths up to 36". Use with electric drills. Literature available.

Order today through your distributor

TERMITE ROTARY MASONRY DRILLS
Made only by TERMITE DRILLS, INC.
87 N. Lotus Ave. Pasadena 8, California



A general view of some of the precast-concrete octagonal piles Espy Paving & Construction Co. is driving for the Georgia Ports Authority pier at Savannah. The floating rig works in the background

of the floating rig. In this operation two lines hung from the boom. One line, in two parts, supported the pile at the two lower pickup points. The other, or whip line, suspended a steel triangular piece; from each end of the base of this piece hung a steel cable to wrap around the pile at the top pickup point, thus keeping it plumb.

Driving the Piles

Once the pile was securely in place between the steel trusses of the template, the lower pickup line was removed and used to pick up the Vulcan No. 0 single-acting hammer with which the piles were driven. The line at the lower pickup points was no longer needed. In lifting the hammer a five-part line was used instead of the three-part line that sufficed for the pile handling. The substitution was made because of the weight involved; it totaled over 10 tons, including 16,000 pounds for the hammer and 4,600 pounds for the follow block.

As the piles were driven, a Gurley transit on the river bank was trained on the feet and inches marked off along the front face of the pile. In this way the engineers counted the number of blows per foot that were required to drive the pile to the desired bearing. Eight test piles were driven; of these, three were selected for the load tests which were performed with hydraulic jacks.

For the Espy Paving & Construction Co., F. B. Carson is Superintendent on the pier project, while Walter R. Boyd is Resident Engineer for Robert & Co., Inc., the consulting engineer. James D. Robinson, Jr., of Atlanta, is Chairman of the Georgia Ports Authority, and Henry W. Sweet, President of the American Association of Port Authorities, is General Manager in Savannah.

Manual on Power Steering

A 32-page engineering and service manual on hydraulic power steering is available from Ross Gear & Tool Co., Lafayette, Ind. It gives complete engineering details, plus data on operation, installation, and maintenance of the Model HP70 Ross Hydrapower steering gear.

Power steering is said to provide both safe and practically effortless steering. The mechanism to transmit hydraulic power to the steering gear consists of a hydraulic pump, reservoir, control valve, and power cylinder.

When the driver's effort at the steering wheel exceeds the preload of the cam-centering springs, the hydraulic system comes into operation and relieves the driver of excessive loads.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 812.

"Expecting a big crowd, old man?"

LACLEDE JOISTS

add STRENGTH plus *Beauty*

to the new Charleston Memorial Hospital

Charleston Memorial Hospital, Charleston, West Virginia. Tucker & Sillings, Architects; Thompson & Street, Contractors.

Where lightweight strength, beauty . . . and functional design are vital—you'll find the answer in versatile Laclede Steel Joists. By specifying Laclede Joists for floor and roof construction you can speed completions *and* help conserve steel.

- No allocation needed—steel joists are a Class 'B' product.
- Prompt shipment from our enlarged mill facilities to suit your construction schedule.

Write for information on the complete line of Laclede quality steels for construction.

LACLEDE STEEL COMPANY
St. Louis, Mo.

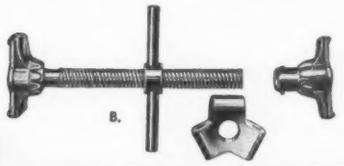
PREVENT COSTLY *Cave-Ins* WITH

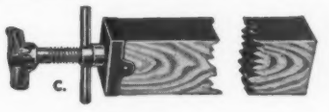
DUFF-NORTON

TRENCH *Braces*

Make Trenches Safe for Workmen

Unexcelled for safe and economical bracing of all trench and excavation jobs . . . Duff-Norton Trench Braces are of strong construction . . . easy to install, easy to maintain when not in use. Write today for full information and proposal on your requirements.





A. This type is supplied complete with pipe (1½" or 2") in lengths from 16" to 60" to suit your needs.

B. Steel fittings only are supplied without pipe if desired. Used with 1½" and 2" pipe.

C. Steel timber brace fittings are furnished without timbers for use with 4" x 4"—6" x 6" and 8" x 8" timbers.

See your local distributor or write for Catalog 203-D

THE DUFF-NORTON MANUFACTURING CO.
MAIN PLANT and GENERAL OFFICES, PITTSBURGH 30, PA.—CANADIAN PLANT, TORONTO 6, ONT.
"The House that Jacks Built"

Safety Face Shield

A new face shield has been developed by United States Safety Service Co., 1215 McGee St., Kansas City 6, Mo. The use of cellulose, acetate, and butyrate materials in the headgear is said to make the Halo attractive, lightweight, and comfortable. It features an all-green plastic spark protector which gives wide-angle vision while eliminating glare from overhead lighting. The visor may be locked in the up position or the working position.

The Halo face shield is available in three styles of headgear, with clear or green visors and a special acid-resistant visor for use around chemicals.

Further information may be secured from the company. Or use the Request Card at page 16. Circle No. 839.

New 10-Yard Scraper

A new 4-wheel scraper for use with the International TD-18A tractor has been added to the Bucyrus-Erie line.

The Bucyrus-Erie B-113 scraper is pictured on a highway job near Bird City, Kans. C. E. Tapp Construction Co., Jennings, Kans., owns the machine.

The B-113 has a 10-yard struck capacity and 14-yard heaped (SAE rating).

It features a push bumper adjustable to eight positions; an apron grill which gives the operator a view of the loading bowl; "fountain" action for directing dirt up through the load; and side cutters for preventing side spilling.

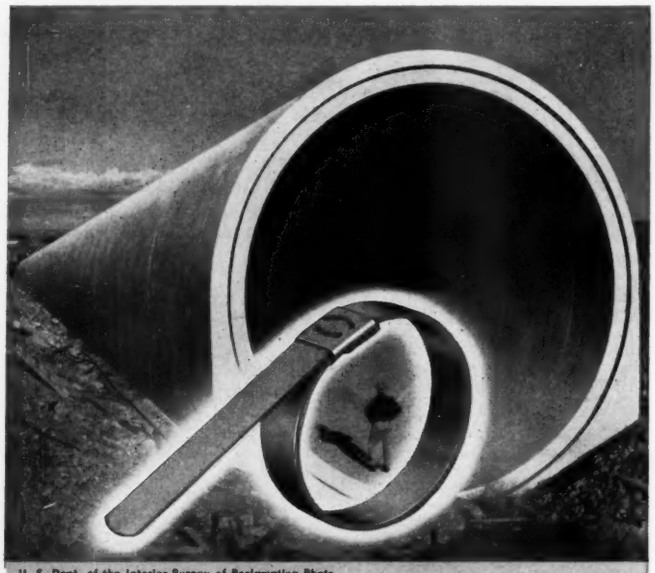
The B-113 also makes use of large-diameter sheaves, a double transport lock, open-socket and wedge-type cable anchors, tire guard plates on the gooseneck, and large cable-drum spindles. Front tires are 18 x 24 and rear tires are either 21 x 24 or 21 x 29.

Further information may be secured from the Bucyrus-Erie Co., Box 56, South Milwaukee, Wis. Or use the Request Card at page 16. Circle No. 773.

Chemical-Resistance Chart

A 2-page chart listing the chemical resistance of synthetic resin protective coatings is available from Prufcoat Laboratories, Inc., 50 E. 42nd St., New York 17, N. Y. Based on laboratory and field tests, it provides potential users with the resistance ratings of three Prufcoat coatings to some 69 corrosive chemicals. Although ratings are said to be based on relatively prolonged direct control, they are intended to indicate the resistance to spills, splashes, drips, and fumes of the listed materials.

This literature may be obtained from the company by requesting Prufcoat Technical Bulletin No. 501. Or use the Request Card at page 16. Circle No. 807.



U. S. Dept. of the Interior Bureau of Reclamation Photo

"The Sign of a Good Hose Clamp"

a hose to water 281,000 acres

Punch-Lok Hose Clamps were on the job in the construction of the giant Dry Coulee Siphon No. 1 of the Columbia Basin Irrigation project in the state of Washington.

Punch-Lok Dependability

PUNCH-LOK COMPANY

321 North Justine Street
Chicago 7, Illinois

THESE PENGO PRODUCTS SAVE YOU MONEY!

THE PENGO EARTH AUGER

- Twin helix—no back thrust!
- Bores true, clean holes in any soil, most sandstones and hardpans, frozen ground, permafrost!
- All wearing parts replaceable on job!
- Made in 15 sizes, 10" to 54" hole diameters, to fit all makes of heavy-duty earth boring machines. Larger sizes on order.

THE PENGO CUTTING HEAD

- Easy installation—welds to your present helix.
- Bores where you never could before!
- Wearing parts are replaceable on the job and are interchangeable with PENGO Auger parts. *(Described at left.)*
- Made in 9 sizes, 8" to 24" diameters. Larger sizes on order.

THE PENGO WISDOM TOOTH

- All PENGO Augers and Cutting Heads are equipped with the drive-on PENGO Wisdom Tooth, specially designed for use on earth augers; cast from special abrasion and shock-resistant steel alloy for *far* longer service life!

"Get the PENGO WISDOM TOOTH— It knows how to bore holes!"

ORDER TODAY—OR SEND FOR LITERATURE, PRICES

PETERSEN ENGINEERING CO.

MANUFACTURERS

SANTA CLARA, CALIFORNIA

Four-cycle Air-cooled

KOHLER ENGINES

Kohler Engines provide reliable power for a wide range of uses. Compact, quick-starting. Engineered and built to the high standards that have won world-wide acceptance for Kohler Electric Plants in construction and other industries. The Kohler mark has been identified with quality products for over three-quarters of a century. Write for information on sales and service franchise.

Kohler Co., Kohler, Wisconsin. Established 1873

KOHLER OF KOHLER

PLUMBING FIXTURES • HEATING EQUIPMENT • ELECTRIC PLANTS
AIR-COOLED ENGINES • PRECISION CONTROLS

Roadside Vacuum Cleaner

The California highway authorities responsible for District VII of that state suffered severe headaches over the untidiness of many miles of state-highway in their district, particularly along the beaches and in the resort areas. W. D. Sedgwick, Assistant District Engineer in charge of Maintenance, in an article republished in *Highway Research Abstracts* for February, 1952, tells how beer cans, bottles, ice-cream cups, and other trash made these places look like public dumps. Since the state highway forces are far too few to tackle such a clearing-up job by hand, authorities looked around for a mechanical method of picking up the trash.

A suction machine seemed to be the only answer, and eventually a leaf-and-litter-collecting unit made by Good Roads Machinery Co. was found to be the most adaptable machine on the market. But everything—bottles, cans, and all—had to go through its vacuum-producing fan. Realizing the fan would not stand up under such a battering, the district shop forces experimented to see whether the machine could be made to pick up bottles and cans without their having to go through the fan.

The first adaptation attached the 10-inch-diameter suction hose to the upper end of an old hot-water tank fastened above the fan with a small box below. The velocity of the heavy articles through the tank carried them *past* the fan into the box, while the light material went *through* the fan into the 14-cubic-yard screened cage, which is equivalent to the dirt bag of a vacuum cleaner.

The next adaptation was a large air-tight compartment in the lower half of the large cage. When it was tried out after the airtight compartment had been installed, it was found that so much vacuum was lost in the hose intake that the machine would not pick up bottles. This was remedied by enlarging the fan and reducing friction by making all pipe connections on curves. The machine now picks up anything that will go through the flexible hose. A seat near the back of the box has a foot rest on which a ball is mounted. A handlebar which swivels in a socket on this ball is attached to the intake hose near the suction end, and with it the operator can sweep a 5-foot strip, as well as control the snout elevation above the ground. With an electric button on the side of the box connected to a buzzer in the cab of the tow truck, the operator can signal the truck operator when something goes wrong or plugs the hose.

Mr. Sedgwick's original article was published in *California Highways and Public Works*, Volume 30, Nos. 11, 12, pp. 46-47, November-December, 1951.

Tractor-Tool Catalog

A 6-page catalog featuring tractor tools for use with Caterpillar tractors and equipment has been issued by the Hyster Co., 2902 N.E. Clackamas St., Portland 8, Oreg. It describes and illustrates the complete line of tools and shows how they can be used to increase tractor production.

The catalog includes the Hystaway excavator-crane; the tractor yarder, winches, and donkeys; logging arches and Sulkys; and the Hyster Grid Roller for road construction and salvaging bituminous pavement.

This literature may be obtained from the company by requesting Catalog No. 1191, or by using the Request Card that is bound in at page 16. Circle No. 772.

Lima-Hamilton Names McCrae

James A. McCrae is a Sales and Service Engineer for the Lima-Hamilton Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio, manufacturer of shovels and cranes. Mr. McCrae makes his headquarters at 1410 Eaton St., Denver, Colo., and his territory includes the states of Colorado and Wyoming with the exception of the following counties in Wyoming: Sweetwater, Uinta, Lincoln, Sublette, and Teton.

drills 6 inches of concrete per minute!

...gives lowest cost per foot of concrete drilled with a TILDEN Rotary Konkrete Kore Drill. Two-thirds more cutting surface make Tilden 70% more efficient. Drills 5 to 7 times more holes without resharpening — even reinforced concrete. Free factory resharpening! Use with any electric or air drill. 29 standard sizes, 3/16" to 4". Interchangeable shanks up to 60".

TILDEN ROTARY KONKRETE KORE drill

Patented core slot expels cuttings *automatically!*

U.S. Pat. No. 2506474

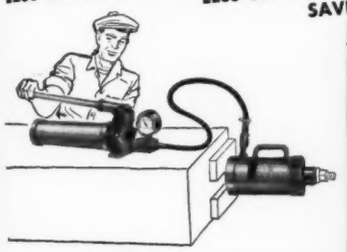
SOLD BY SUPPLY HOUSES EVERYWHERE

WRITE TODAY for free, illustrated catalog.

TILDEN TOOL MANUFACTURING COMPANY
209 Los Molinos • San Clemente, California
Branch Office:
1144 W. Washington Blvd., Chicago 7, Illinois

Simplifies PULLING!

LESS RIGGING NEEDED! LESS SET-UP TIME! SAVE THE TOOL COST ON ONE JOB!



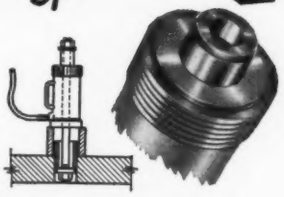
CONSTRUCTION JOBS FOR RE-MO-TROL

- Pre-stress concrete
- Shoring applications
- Force flooring and sections into place
- Lift mobile equipment
- Lift and align beams
- General maintenance
- Test load bearing ability of soil
- Straighten buckets and forms

The New SIMPLEX Re-Mo-Trol Hydraulic Pumps and Remote Controlled Rams "Center-Hole"* PULLERS

The only remote control puller offering this time and work saving advantage! Just insert a pull rod or screw through the tubular ram plunger and secure it to the object to be pulled. Rod is drawn through as plunger extends, in a direct-line pull. No complicated rigging. Ram is its own back-up. Sketch shows typical use removing sleeve.

Exclusive "Center-Hole"* Speeds the Job!



If it can be pulled, Re-Mo-Trol can pull it easier! Pulls gears—wheels—pinions—axles—shafts—sleeves—liners—studs. Operates as shown with center pulling screw, or pull rods and bracket. Or use it for any kind of conventional lifting or pressing job. Seven complete units—10 to 100 tons capacity.

*On Rams of 30-tons or greater capacity

PUMPS AND RAMS Interchangeable

Two pumps—seven rams. Smaller pump handles all Rams up to 30 tons capacity, larger pump handles any Re-Mo-Trol Ram. You can buy only the units you actually need!

Simplex LEVER • SCREW • HYDRAULIC Jacks

Write for Bulletin: Hydraulic 51 for full information

TEMPLETON, KENLY & CO. • 1002 S. Central Ave., Chicago 4, Ill.

IT ISN'T A GUESSING GAME WHEN IT'S A.G.C. RATED

Guessings fine for Fairs — or trips to Waikiki — BUT IT'S DEADLY TO GUESS ON MIXERS. That's why leading architects, engineers and contractors insist on A.G.C. rated mixers. To wear the A.G.C. plate, mixers and pavers must meet rigid specifications as to sizes and mixing capacity. Always look for the A.G.C. Rating Plate when you buy.

11-S MIXER CERTIFIED AS BEING IN COMPLIANCE WITH A.G.C. STANDARDS BY MIXER MANUFACTURERS BUREAU GUARANTEED TO HOLD AND PROPERLY MIX 11 CUBIC FEET OF CONCRETE PLUS 10% WHEN OPERATED IN LEVEL POSITION.

Mixer Manufacturers Bureau

Affiliated with the Associated General Contractors of America, Inc.

CHAIN BELT COMPANY, Milwaukee, Wis.
CONSTRUCTION MACHINERY CO., Waterloo, Iowa
THE FOOTE CO., INC., Nunda, N. Y.
THE JAEGER MACHINE CO., Columbus, Ohio
THE KNICKERBOCKER CO., Jackson, Mich.
KOEHRING COMPANY, Milwaukee, Wis.
KWIK-MIX COMPANY, Port Washington, Wis.
THE T. L. SMITH COMPANY, Milwaukee, Wis.
WORTHINGTON PUMP AND MACHINERY CORP., Construction Equip. Div., Dunellen, N. J.

Improvements Made In Line of Tractors

Improvements in its line of tractors are announced by Minneapolis-Moline Co., Minneapolis 1, Minn. The 1952 models have more power and new brake and front-wheel features.

Lambert double-disk brakes are mounted on the differential pinion shaft of the UTIL and enclosed in the rear axle housing of the RTI. This type of brake has four contact surfaces that provide increased braking capacity. Increased ratio of brakes to rear wheels minimizes the pedal pressure needed. Separate pedal control assists in making shorter turns or may be used to transfer power to the opposite wheel when necessary.

Pedals are mounted in a close side-by-side arrangement on the right side so they can be operated at the same time. Provision is also made to convert to a single large pedal by means of a spacer and bolt connection for synchronous braking of rear wheels on general-purpose work. For convenience the foot throttle is located close to the brake pedals and the hand throttle is located to the left of the transmission case.

The 1952 Minneapolis-Moline tractors have more power than older models and new brake and front-wheel features.

Other new features of the Model UTIL include increase of exclusive shuttle gear, reverse speeds from 85 to 96 per cent of forward speeds, shuttle gearshift lever relocated for easier operation, and shifterfork redesigned to eliminate neutral position and decrease length of travel.

Further information on these tractors may be secured from the company. Or use the Request Card at page 16. Circle No. 838.

Chest-Mounted Shield For Face Protection

A chest-mounted face shield is announced by Mine Safety Appliances Co., Braddock, Thomas, and Meade Sts., Pittsburgh 8, Pa. It is supported by easily adjusted neck and chest straps for balanced weight distribution. A soft pliable-leather pad rests on the chest without pressure or binding.

The faceshield features improved vision, relief from head strain, and ample ventilation. The standard model is supplied with a clear Chipruf visor 8 inches long by 0.040 inch thick; these visors are available in various sizes and for various kinds of service. A metal hinge enables the visor to be set at any desired angle, height, or distance. Snap fasteners permit quick and easy visor replacement when necessary.

Further information may be secured from the company by requesting Bulletin No. CN-5. Or use the Request Card bound in at page 16. Circle No. 775.

Bulletin on Soil Compactor

A 12-page bulletin on the CRJ 6 vibratory compactor is issued by Vibro-Plus Products, Inc., 54-11 Queens Blvd., Woodside, Long Island, N. Y. The unit has a solid vibrating base plate, 65 x 45 inches, in direct contact with the soil. It travels at speeds up to 26 feet per minute and is powered by a 10-hp diesel engine. The depth of effective penetration is said to vary from 20 to 40 inches.

This literature may be obtained from the company, or by using the Request Card at page 16. Circle No. 799.

Yes, sir! You can get that 8" Suction Hose by noon today!

CONTINENTAL has it in stock Boston to 'Frisco 1½" through 10"

You'll get prompt delivery on suction hose when you call one of Continental's 16 Warehouses. All these warehouses carry large stocks of suction hose. Many of them stock both 8" and 10" hose.

Thus you have no profit-eating delays waiting for long distance shipments. And there's no need to tie up your own working capital in costly suction hose inventories. These conveniently located Continental Warehouses carry the inventory for you. So next time you need suction hose, call the nearest Continental Warehouse. You'll like the service you get.

Immediate delivery from 16 CONTINENTAL WAREHOUSES

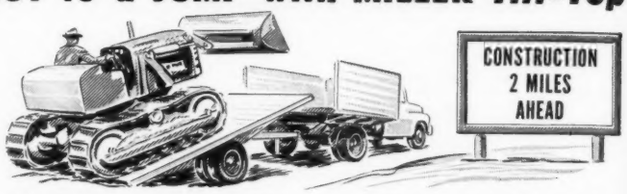
BALTIMORE 1, Md. 112 West Pratt St.
BOSTON (Allston 34), Mass. 12 Franklin St.
BUFFALO 3, N. Y. 115 Clinton St.
CHICAGO 10, Ill. 10 West Hubbard St.
CINCINNATI 2, Ohio 49 Central Ave.
CLEVELAND 15, Ohio 2731 Prospect Ave.
DETROIT 27, Mich. 13801 Schoolcraft Ave.
INDIANAPOLIS 2, Ind. 309 North Capitol Ave.
LOS ANGELES 21, Calif. 2037 South Santa Fe Ave.
MEMPHIS 3, Tenn. 268 Madison Ave.
NEW YORK 7, N. Y. 147 Chambers St.
PHILADELPHIA 6, Pa. 311 North Randolph St.
PITTSBURGH 21, Pa. 607 Brushton Ave.
SAN FRANCISCO 3, Calif. 450 Potrero Ave.
ST. LOUIS 8, Mo. 4018 Olive St.
SYRACUSE 2, N. Y. 1606 West Genesee St.

Send now for CONTINENTAL'S Special Contractors' Hose Catalog

RUBBER by CR CONTINENTAL

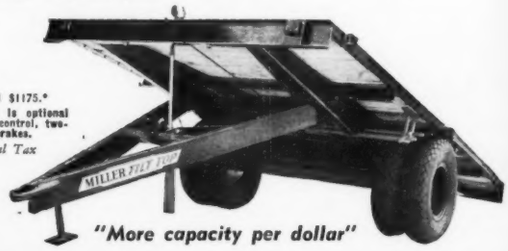
CONTINENTAL RUBBER WORKS • 1990 LIBERTY ST. • ERIE 6 • PENNSYLVANIA

... between-job travel for slow machines CUT to a JUMP with MILLER Tilt-Top



JOB-to-JOB time loss for slow moving machines is cut to a minimum when you have a MILLER handy . . . it's the *extra* trailer for *extra* production. Where large flat bed trailers are usually too cumbersome for lighter hauling, with MILLER Tilt-Top, self-moving equipment practically loads itself onto tilted platform and can be towed to the next operation in jig time . . . cutting non-productive "travel time" for operator as well as equipment. Standard platform is 14'x8', optional 16' available.

MODEL "B" 10 TON $1175.*
The following equipment is optional and extra: hydraulic tilt control, two-speed winch, electric brakes.
*Plus 8% Federal Tax



"More capacity per dollar"

MILLER Tilt-Top TRAILERS

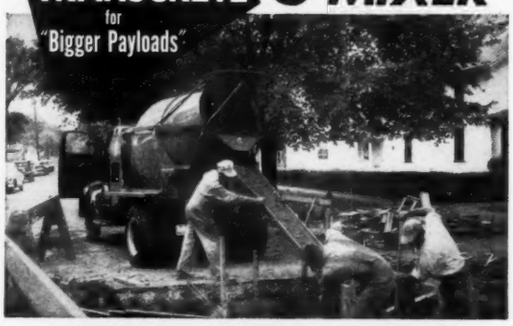
MILLER RESEARCH ENGINEERS

Write for FREE literature
456 SOUTH 92nd ST.

Dept. C-4
MILWAUKEE 14, WIS.

MIXES - AGITATES TRANSCRETE for "Bigger Payloads"

3 YARD MIXER



THE COMPLETE MACHINE FOR MAXIMUM PAYLOADS

1. Continuous "L" shaped blade construction — for quicker charging — mixing — discharging.
2. Quiet, smooth roller chain — cut sprocket drive absorbs all shock.
3. Hardened nickel alloy steel drum rollers — Twin Timken mounted.
4. Clutch and Throttle Controls at either end of drum — Reached from catwalk.
5. Extra high discharge with hinged one-man chute.

CONSTRUCTION MACHINERY COMPANIES
WATERLOO, IOWA

Fly Ash May Better Concrete Pavement

Tests Indicate That It Will Stop Cement-Aggregate Reactions At Slight Cost and Improve Other Concrete Qualities

• THE reaction between cements and certain sand-gravel aggregates produced in the midwest is a most serious problem today. This reaction results in "map-cracking" on the surface of the finished concrete, and often causes excessive expansion which can destroy the concrete entirely.

Engineers and contractors have tried a number of ways to prevent this expansion. The most common consists of replacing part of the sand-gravel aggregate with crushed limestone. This also reduces the cement factor in the concrete, and therefore, to some extent, the cost. However, for areas lacking good natural aggregates, the cost of importing limestone usually more than offsets the saving.

Pozzolan materials will also inhibit cement-aggregate reaction, but most of them make it necessary to increase the water-cement ratio and cause the wet surface of the concrete to be sticky and difficult to finish. The exception is fly ash, a finely divided residue material caught in the stacks of furnaces that burn powdered coal.

The Nebraska Department of Roads and Irrigation recently undertook a series of laboratory and field tests to determine the effectiveness of fly ash in reducing cement-aggregate reaction and its effect on the quality of finished concrete.

Laboratory Tests

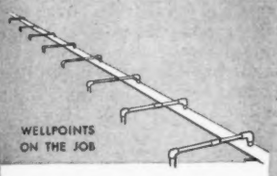
The first were mortar-bar tests. Following ASTM Designation C227-50T, these tests determined the expansion of 1 x 1 x 10-inch mortar bars made with various amounts of fly ash and cured in sealed containers at 100 degrees F for one year. The fly ash reduced the expansion for *every* combination of cement and aggregate tested. Replacing 30 per cent of the cement with fly ash completely inhibited expansion in all mixes.

The Department next determined the effect of fly ash on the plasticity of the concrete mixes. The fly ash increased plasticity in all cases. With a fixed amount of mixing water it increased the slump as much as 4½ inches. Or looking at it the other way, if the slump was kept constant, the mixing water could be reduced as much as 0.3 gallon per sack of cement. To obtain a given amount of entrained air, however, the lab technicians had to use greater quantities of air-entraining agent. They assume that the carbon in the fly ash caused the reduction in air voids.

The compressive strengths of con-

(Concluded on next page)

dewater the Complete way



WELLPOINTS ON THE JOB

Pre-drainage with Complete Wellpoint Systems prevents trouble wherever subgrade water is a problem. By eliminating the water hazard, you usually eliminate any need for sheeting — you often are able to continue operations even in sub-zero weather — you frequently can use equipment which "wet grounds" would rule out—and you always can count on completion in scheduled time at scheduled costs!

Write today for Complete Catalog Dept. CEM

COMPLETE MACHINERY & EQUIPMENT COMPANY, INC.
36-40 11th STREET
LONG ISLAND CITY, N. Y.

COMPLETE WELLPOINT SYSTEMS

FOR SALE OR RENT

● Fits on the frame of any truck, 1½ tons or larger!

● Hydraulic power swings and lifts boom!

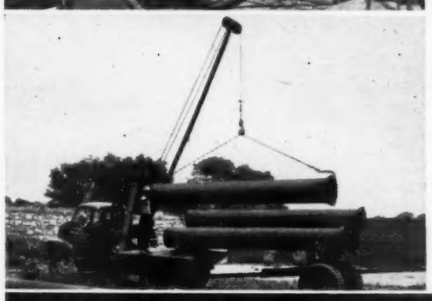
PITMAN HYDRA-LIFT
low cost hydraulic truck crane!

● Lifts up to 6,400 pounds!

● Boom telescopes from 12 to 17 to 22 feet!

● Requires only 40 inches behind the truck cab!

● Truck moves from job to job at normal truck speed!



Hydra-Lift slashes costs on dozens of lifting and hauling jobs. On the market for just one year, it's already been put to work cutting costs and saving time by scores of pipe, paving, sewer, general and building contractors, gas and water companies, transfer companies, mines, refineries and others all over the country. Write today for full information on the new, economical Hydra-Lift!

PITMAN MANUFACTURING COMPANY
300 West 79th Terrace Kansas City, Missouri

Ask FOR THE BOSS WYTEFACE*
The NEW Steel Tape Easier to Use Lower Cost

K&E's new BOSS Wyteface, latest addition to the quality line of WYTEFACE steel tapes, features these outstanding advantages:

- Genuine Wyteface steel tape line (black markings on white background with foot markings in red).
- Wide-sweep winding handle—less friction.
- Convenient notched finger grip edge on rugged all-metal case.
- Outstanding value at $4.90 for 50' and $7.95 for 100' lengths.

FAVORITE® WYTEFACE—finest of all top quality steel tapes—is available in 25', 50', 75' and 100' lengths.

HANDY WYTEFACE steel tape rules: 98¢ for 6' length; $1.19 for 8'; $1.49 for 10'.

K+E Drafting, Reproduction and Surveying Equipment and Materials. Slide Rules. Measuring Tapes.

There's a WYTEFACE for every purpose; see the complete line at your supply house or hardware store.

Prices Slightly Higher in the West

* Trade Mark

KEUFFEL & ESSER CO.
NEW YORK • HOBOKEN, N. J.
CHICAGO • ST. LOUIS • DETROIT
SAN FRANCISCO • LOS ANGELES • MONTREAL

Now!
BUY used equipment
SELL used equipment
ACQUIRE competent personnel
thru
THE TRADING POST, CONTRACTORS & ENGINEERS MONTHLY
470 4th Avenue New York 16, N. Y.

Fly Ash May Better Concrete Pavement

(Continued from preceding page)

crete cylinders made with a combination of fly ash and cement were lower at early ages but higher at later ages than those of similar concretes made without fly ash.

Tests in the Field

In late 1950 the Nebraska Bureau of Highways let a contract for 6.15 miles of experimental pavement. Fly ash replaced various amounts of cement on the major portion of this project. The Bureau chose a section that would provide uniform traffic densities over the fly-ash-concrete sections and the control sections. The materials were dry-batched and mixed in a MultiFoot 34-E single-drum paver. Batching and placing were identical on the two sections except for the extra fly-ash loading in the one set of trucks.

There were one or two problems with the fly ash. If improperly handled it caused large amounts of dust, and because of its fineness it had a tendency to flow through small holes and cracks in the truck boxes, unless they were plugged.

The behavior of the fly-ash concrete mixed in the field was similar to that made in the laboratory. For a given amount of air entrainment and slump, the fly ash reduced the amount of mixing water required and increased the plasticity of the mix. There was very little bleeding on any of the sections. In fact, on hot windy days the surface of the concrete dried so rapidly that it became rubbery and difficult to finish. When the finishing equipment floated over a high spot in the concrete the surface would depress beneath the float only to rise again after it had passed.

In general the finishing characteristics of all concrete on the project were good, though. The contractor experienced difficulty in finishing only when humidity was low and there was a hot wind. Because of the many variables in a field test project it was impossible to trace this difficulty to the use of fly ash. But the test did indicate that the maximum amount of fly ash that can be used may be limited by the finishing characteristics of the concrete during hot weather.

Cylinder and beam tests made from the field mixes showed again that the fly-ash concrete had lower early strengths but higher later strengths than regular concrete. Fly ash reduced the percentage of water absorption and increased the resistance of the concrete to freezing and thawing.

Abstracted from a paper "Use of Pozzolan Materials in Concrete" by C. A. Sutton, Senior Engineer of Physical Tests, Bureau of Highways, Nebraska Department of Roads and Irrigation, at the 1951 Annual Meeting of the American Association of State Highway Officials.

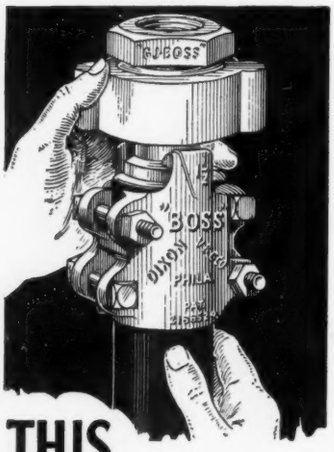
Bledsoe for Concrete Pipe

Byron A. Bledsoe took over last month the post of Engineering Representative in Atlanta, Ga., for Universal Concrete Pipe Co., Columbus, Ohio, manufacturer of all sizes of concrete pipe. Mr. Bledsoe, who has many years of engineering experience to his credit, has served in Washington, D. C., since 1949 as Engineer of Traffic and Operations at the Highway Research Board. Universal's Atlanta plant is located at 1270 Milton Ave., S. C., and Mr. Bledsoe, together with LeRoy Epperson, assists Manager C. Ray Wilhelm.

Data on Sand Classifiers

A bulletin on automatic hydraulic sand classifiers is issued by Charles E. Wood Co., 906 N. Water St., Milwaukee 2, Wis. Auto-Vortex units are made in both the cone and bowl types. The cone classifier is built in sizes from 30 to 96 inches in diameter and usually does the coarser separation. The larger bowl-type units with 10 to 30-foot diameters provide a large settling area with a peripheral overflow. They recover very fine sand from large volumes of water and eliminate excess fines, silt, and clay.

This literature may be obtained from the company. Or by using the Request Card at page 16. Circle No. 802.



THIS *Washerless* COUPLING

has no equal for efficiency, durability and safety in every high or low pressure hose service . . . steam, water, gas, air, oil, hydraulic. Ground joint union between stem and spud provides leakproof, trouble-free seal. Furnished with super-strong, "Boss" Offset and Interlocking Clamp.

"GJ-BOSS"
GROUND JOINT
FEMALE COUPLING
STYLE X-34

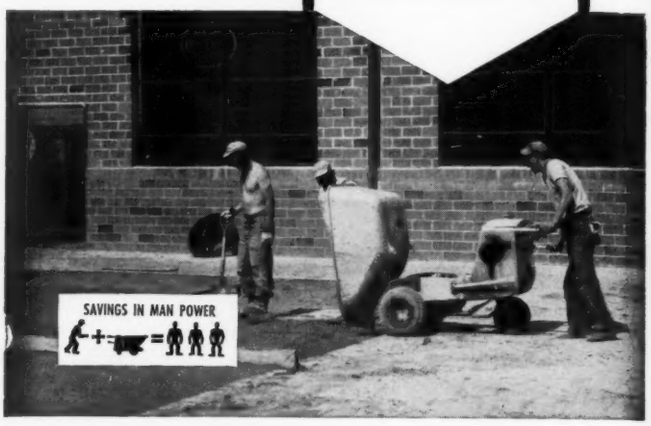
All parts steel or malleable iron, thoroughly rustproofed. Sizes ¼" to 6", inclusive.

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON
Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO., LTD., TORONTO Associate Companies

The Prime-Mover and one man dumps 1500 pounds of concrete every trip. A fleet of Prime-Movers makes quick work of pouring large areas—returns a nice profit on jobs where you have to be on the ball.

THIS IS THE WAY TO USE PRIME-MOVER IN YOUR OPERATIONS



Profitable — from basement to top floor!

Powered by a dependable 5 H.P. Wisconsin engine the Prime-Mover puts in a full day's work. Can be used on either ramp or elevator operations. Takes 20% grade with 1500 lb. load. Constant mesh transmission forward and reverse. Positive braking. Compact size allows transportation, when loaded, on the ordinary construction elevator capable of carrying a ton.

The man-power savings of a Prime-Mover is an important factor on these duties: moving equipment and tools, hauling concrete and aggregates, handling plaster, finishing fixtures and roofing materials. Blade attachment handles light grading jobs and snow removal.

Write to us for name of distributor and complete data.

THE PRIME-MOVER CO., Muscatine, Iowa

THE Bell PRIME-MOVER

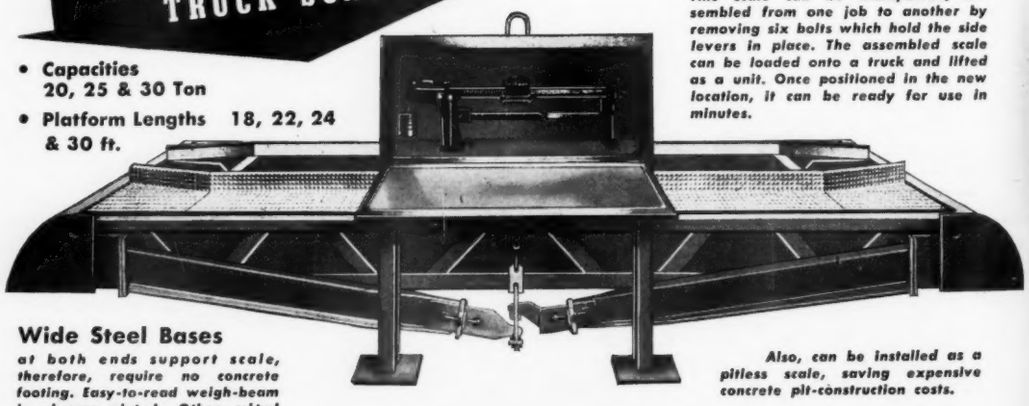
THURMAN PORTABLE TRUCK SCALE

THIS SCALE CAN BE MOVED FROM JOB TO JOB, AS A UNIT

- Capacities 20, 25 & 30 Ton
- Platform Lengths 18, 22, 24 & 30 ft.

Accurate and Portable

This scale can be transported, assembled from one job to another by removing six bolts which hold the side levers in place. The assembled scale can be loaded onto a truck and lifted as a unit. Once positioned in the new location, it can be ready for use in minutes.



Wide Steel Bases

at both ends support scale, therefore, require no concrete footing. Easy-to-read weigh-beam is chrome-plated. Other vital parts electro-plated against erosion.

Also, can be installed as a pitless scale, saving expensive concrete pit-construction costs.

The Thurman Line Includes:

• Pit Scales up to 50-Ton capacity • Pitless Scales • Batching Scales • Liquid Weighing Scales • Wheelbarrow Scales • Warehouse Scales • This and other weighing equipment in sizes to fit your requirements

THURMAN MACHINE CO.
(Scale Division)
Established 1918
156 North Fifth Street Columbus 15, Ohio

Produce Better Concrete Faster at More Profit for you . . . with Mall Concrete Vibrators

Couple better concrete through stiffer mixtures, using less cement . . . to faster operations from job to job, and you have the ideal profit formula, achieved with Mall Concrete Vibrators.

Mall Vibrators consistently deliver better concrete through better compaction, increased density and water-tightness. Such heavy-duty features as the rugged power plant, a steel wire vibrator shaft and an internal housing liner with a continuous bearing surface are contributing factors. But, combine these well-engineered features with Mall's lighter weight and easy portability, and you complete the picture. You not only produce *better* concrete at profitable *savings* in cement — you produce better concrete *faster* at savings in time and labor. *Double savings that meet competition, yet put more profit in every contract.* Write today for information about Mall gasoline, electric and pneumatic concrete vibrators.

40 Factory-Owned Service Warehouses, Coast to Coast, To Serve Our Customers and Thousands of Dealers.

Mall TOOL COMPANY
7743 S. Chicago Avenue
Chicago 19, Illinois

AP-3828-1a

CLASSIFIED ADVERTISING

An advertising inch in the Trading Post is measured ⅞-inch vertically on one column. Space reservations close in the New York office on the 10th of the month preceding publication. Send your classified copy to:

The Trading Post, Contractors & Engineers Monthly
470 Fourth Avenue, New York 16, N. Y.

DECALS
SAVE up to 25% on your DECALS
10 DAY DELIVERY
MIRACLE DECAL CO.
WICHITA, KANSAS

FOR RENT
LIMA Type 34 Crane
MARION Model 33M Crane
—up to 60-ft. booms
Crane, clam, & drag combinations
PRIESTER MACHINERY COMPANY
249 So. Third St. Phone 5-6885
Memphis, Tennessee

MARKLEY
ROCK DRILL DUST CONTROL
Portable Units for Rock Drilling in
General Excavation
Mines — Tunnels
Quarries
JAMES H. MARKLEY
80 Snyder Road, Ramsey, N. J.
Tel. Ramsey 9-1179

STEEL SHEET PILING
185 Pcs. Beth. AP-3—60 Ft.
300 Pcs. ZP-32 Lb. 50 Ft.
242 Pcs. Beth. DP-1—50 Ft.
1288 Pcs. Carnegie Mills—60 and 45 Ft.
900 Pcs. Beth. SP4—35 and 45 Ft.
41B & Marion 32 Steam Cranes
R. C. STANHOPE, INC.,
60 E. 42nd St., New York 17, N.Y.

REMEMBER
Sell or Buy Used Equipment.
Acquire experienced help.
Send your copy to
The Trading Post
Contractors & Engineers Monthly
470 Fourth Ave., New York 16, N. Y.

IMMEDIATE DELIVERY
1—Allis-Chalmers Model HD7W tractor w/ Gar Wood Bulldozer.
1—Allis-Chalmers Model B tractor with mower.
1—"Caterpillar" Model 212 motor grader.
1—Bros Model SG-55 skid mounted steam generator.
1—Allis-Chalmers Model HD10W with Baker Hydraulic Bulldozer.
1—LeTourneau 3½ cu. yd. scraper. Very clean.
1—Novo traffic line marker.
1—Titan chain saw.
1—Adams 414 Tandem drive motor grader, like new.
ILLINOIS ROAD EQUIPMENT CO.
1310 East Jefferson Street
SPRINGFIELD, ILLINOIS
Phone 2-7709

FOR SALE
NORTHWEST 80-D Combination Shovel & Dragline.
EUCLID 43FDT Bottom Dump Wagons. Have 6.
La PLANT-CHOATE TW-300 Motor Wagon, 14 Yd.
La PLANT-CHOATE TS-300 Motor Scrapers, 14 Yd.
LIMA Type 34 Crane, 60 Ft. boom.
MARION 33-M Crane, G.M. Diesel.
LIMA 750 Crane, 70 ft. boom, Cat. Diesel
PRIESTER MACHINERY COMPANY
249 So. Third St. Phone 5-6885
Memphis, Tennessee

INDEX TO ADVERTISERS

Acrow, Inc. 6, 7
Adams Mfg. Co., J. D. 51
Air Reduction Sales Co. 79
Allis-Chalmers Tractor Div. 62, 63
Aluminum Industries, Inc. 108
Amerco, Inc. 109
American Hoist & Derrick Co. 46, 109
American Manganese Steel Div. 68
American Steel & Wire Div., U. S. Steel Co. Subsidiary 88, 89
Armco Drainage & Metal Prod., Inc. 56
Arrow Tools, Inc. 90
Athey Products Corp. 16
Austin-Western Co. 95

Bachtold Brothers, Inc. 69
Ballard, C. L. 107
Barber-Greene Co. 59
Barnes Mfg. Co. 29
Beaver Pipe Tools, Inc. 90
Bethlehem Steel Co. 82
Bettis Corp. 83
Birmingham Mfg. Co. 70
Blaw-Knox Div. 48, 49
Borne, Scrymser Co. 45
Brunner & Lay, Inc. 42
Bucyrus-Erie Co. 66, 67
Buda Co. 28
Buffalo-Springfield Roller Co. 103

Carver Pump Co. 114
Caterpillar Tractor Co. 9
Celotex Corp. 81
Chevrolet Motor Div. GMC 34
Chicago Pneumatic Tool Co. 10
Chipman Chemical Co., Inc. 21
Cleaver-Brooks Co. 86
Cleco Div. 94
Cleveland Trencher Co. 109
Clipper Mfg. Co. 50
Complete Machinery & Equip. Co., Inc. 121
Construction Machinery Cos. 120
Continental Rubber Works 120
Cook Bros. Equip. Co. 17
Cooper Co., John 8
Cummer & Son Co., F. D. 110

Davey Compressor Co. 35
Demo-Canon Engineering & Mfg. Co., Inc. 94
Dempster Bros., Inc. 105
Detroit Diesel Engine Div. GMC 23
Dewey & Almy Chemical Co. 113
Dienstfrey, Norbert 93
Dixon Valve & Coupling Co. 122
Dudgeon, Inc., Richard 93
Duff-Norton Mfg. Co. 117

Eagle Iron Works 114
Eaton Mfg. Co. 39
Embury Mfg. Co. 115
Essick Mfg. Co. 32
Euclid Road Machy. Co. 58

Fleco Corp. 8
Foote Co., Inc. 96
Ford Motor Co. 57
Foster Co., L. B. 71
Fuller Mfg. Co. 14

Galion Iron Works & Mfg. Co. 83
Garrison Mfg. Co. 114
Gar Wood Industries, Inc. 54, 55
Giles Drilling Corp. 109
Gold Foundry & Machine Works 99
Goodall Rubber Co., Inc. 100
Goodyear Tire & Rubber Co. 5
Griffin Wellpoint Corp. 96
Gulf Oil Corp. 75

Harnischfeger Corp. 37
Hayward Co. 56
Hendrix Mfg. Co., Inc. 43
Hewitt-Robins, Inc. 92
Hetherington & Berner, Inc. 44
Hopkins Volcanic Specialties, Inc. 22
Horn Co., Inc. A. C. 91
Hose Accessories Co. 20
Hough Co., Frank G. 40, 41
Huber Mfg. Co. 87
Hyatt Bearings Div. GMC 93

Ingersoll Steel Div. 112
Insley Mfg. Corp. 92
International Harvester Co. 84, 85
Iowa Mfg. Co. 72, 73
Irvington Form & Tank Corp. 116

Jackson Mfg. Co. 112
Jackson Vibrators, Inc. 44
Jaeger Machine Co. 38, 76
Jahn Trailer Div. 102
Joy Mfg. Co. 78

Keuffel & Esser Co. 121
K & N Machine Works, Inc. 37
Kingsdown Cable & Wire Co. 33
Koehring Co. 26, 27
Kohler Co. 118
Koppers Co., Inc. 33

Laclede Steel Co. 117
LaPlant-Choate Mfg. Co., Inc. 77
Le Tourneau, Inc., R. G. 124
Littleford Bros., Inc. 102
Lombard Governor Corp. 10, 79
Lull Mfg. Co. 69

Madsen Iron Works, Inc. 45
Maginnis Power Tool Co. 104
Mall Tool Co. 123
Master Vibrator Co. 116
Maxon Construction Co., Inc. 20
McCaffrey-Ruddock Tagline Corp. 20
McKiernan-Terry Corp. 106
McKinney Drilling Co. 68
McKissick Prod. Corp. 22
Mid-Continent Tube Service 14
Miller Research Engineers, Ray 120
Minneapolis-Moline 53
Miracle Decal Co. 123
Mixer Mfrs. Bureau 119
Monarch Road Machy. Co. 102
Morin Mfg. Co., Inc. 112

Naylor Pipe Co. 115
New England Carbide Tool Co. 109

Oliver Corp. 99
Omaha Standard Body Corp. 75
Onan & Son Inc., D. W. 100
Overman Mfg. Co., I. J. 76
Owen Bucket Co. 113

Peterson Engineering Co. 118
Phoenix Prod. Co. 115
Pioneer Engineering Works 30, 31
Pitman Mfg. Co. 121
Preco, Inc. 64
Pressed Steel Car Co., Inc. 102
Prime-Mover Co. 122
Punch-Lok Co. 118

"Quick-Way" Truck Shovel Co. 47
Quinn Wire & Iron Works 57

Rice Pump & Machine Co. 39
Ridge Tool Co. 42
Rockford Clutch Div. 38
Roebling's Sons Co., John A. 65
Roeth Vibrator Co. 53
Rogers Bros. Corp. 111
Roper Corp., George D. 104

Safeway Steel Prod., Inc. 36
Sasgen Derrick Co. 15
Servicised Prod. Corp. 34
Shunk Mfg. Co. 74
Silver Booster Mfg. Co. 38
Sinclair Refining Co. 18, 19
Slope Meter Co. 71
Southwest Welding & Mfg. Co. 11
Sprague & Henwood, Inc. 47
Sterling Wheelbarrow Co. 98
Stewart-Hall Chemical Corp. 101
Stow Mfg. Co. 111
Stulz-Sickles Co. 110
Superior Concrete Accessories, Inc. 21
Swenson Spreader & Mfg. Co. 91
Syntron Co. 108

Templeton, Kenly & Co. 119
Termite Drills, Inc. 116
Texas Co., Asphalts 3
Texas Co., Lubricants 12, 13
Thew Shovel Co. 61
Thurman Machine Co. (Scale Div.) 122
Tilden Tool Mfg. Co. 119
Timken Roller Bearing Co. 70
Torrington Co. 29
Transport Trailers, Inc. 97

Union Wire Rope Corp. 36
Unit Crane & Shovel Corp. 90
United States Rubber Co. 97
U. S. Steel Co. Subsidiary 88, 89
Universal Atlas Cement Co. 15
Universal Form Clamp Co. 101

Vibro-Plus Prod., Inc. 16
Vulcan Iron Works 110
Vulcan Tool Mfg. Co. 60

Warren Foundry & Pipe Corp. 46
Warsop Power Tools, Inc. 28
Watson-Stillman Co. 64
Waukesha Motor Co. 98
Wellman Engineering Co. 64
Wellman Co., S. K. 74
White Co., David 32
White Mfg. Co. 103
Whiteman Mfg. Co. 107
Whitestown Trencher Co., Inc. 32
Williams Form Engineering Corp. 78
Winpower Mfg. Co. 105
Wisconsin Motor Corp. 108
Worthington Pump & Machinery Corp. 60

LOW BED TRAILERS, TRUCK CRANES.
Cat. 212 Grader.
KOEHRING MIXER—56s, HD 19 A.C. BULLDOZER 900 HOURS.
CATERPILLAR D-4 with ATHEY OVERHEAD LOADER, 3000 Hours.
USED: ROGERS—DW50D tons, 16-9:00x15 Tires, Air Brakes, 10'0" wide, 24" high.
ROGERS—C35 Level deck, 16-7:50x15 Tires, Fruehauf C40 6-ton, level deck.
HUGHES—ILB50 tons, 16-8.25x15 tires, 18'0"x27" Deck, Air Brakes.
JAHN 15-ton THD4, Deck 8'0" wide x 28'0"x16'0" length. MILLER 7 to 10-ton TILT TOP, 4-8.25x15 tires, 8'0" wide x 16'0" long deck.
ROGERS—DW60D with 16-8.25x15-14 ply tires, 8'0"x18'0"x22" Deck.
MICHIGAN TLDT20 ½-yd. Heavy-duty Truck Crane, with Shovel Front, ext. boom and sticks. Fairleads, 60' boom 15' jib. ½-yd. Haiss Clam Digging bucket. 2000 lbs. extra counter weights, snatch blocks. Excellent.
MICHIGAN TLCT16 TRUCK CRANE, 40' boom. Priced.
UNIT, Model 1020 ½-yd. Backhoe & SHOVEL FRONT. Rudomatic Tagline. Chrysler Gas.
NEW: ROGERS BROS. LOW-BED, HEAVY-DUTY TRAILERS, 5-100 tons.
MURRAY A. CLARK, BOX 428 S EWAN TERRACE, VINELAND, N. J. PHONE 7-1009

STOP that WATER
With FORMULA NO. 640
A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—hold 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

VULCAN
PILE HAMMERS AND EXTRACTORS
NEW OR FACTORY REBUILT
FOR SALE • • • FOR RENT
32 W BELL AVE CHICAGO ILL

DOUBLE DUTY

28 m.p.h. "D" Roadsters

power rear-dumps for rock hauls . . . scrapers for dirtmoving

With prime mover coupled to rear-dump Tournarocker, Orange Constr. Co. moves shovel rock for bridge approach at Leon, W. Va. All-steel body stands up well under heavy loading shocks . . . requires minimum patching and repairing.

ORANGE CONSTRUCTION CO., Madison, West Virginia contractors, handle both scraper dirt and shovel rock on road jobs throughout the East. They keep equipment inventory to a minimum and still maintain maximum job efficiency by making their 2 D Tournapull prime movers do "double duty." These 2-wheel, 122 h.p. prime movers are used both with 7-yd. electric-control Carryalls to load, haul, and spread dirt, and with interchangeable 9-ton rear-dump Tournarockers to haul and dump shovel-loaded rock. For example . . .

2 Tournarockers outhaul 3 dump trucks, 2 to 1

Right after completing a dirt job on a Clay County secondary road near Charleston, W. Va., Orange Construction Co. had to move 37,000 yds. of rock to construct a bridge approach on U. S. 35 near Leon. They simply uncoupled the scraper units from the Tournapull prime movers . . . hooked up the Tournarockers . . . used these two 9-ton Rear-Dumps to haul 25,900 yds. (70%) of total yardage. Three 6-ton trucks moved the other 11,100 yds. . . . 30% of the total. In other words, the 2 D Tournarockers, with capacity equal to that of the 3 trucks, outhauled them, 2.3 to 1!

Move 100 pay yards hourly on 1800' cycle

In typical operation, Tournarocker was shovel-loaded with 5 pay yards of rock in 90 seconds . . . highballed 900' through traffic, up a 9% grade, and down 4% to 12% grades . . . completing the 1800' cycle in 5 minutes. That's 10 trips per 50-minute hour for each D Tournarocker . . . 20 loads hourly for both units . . . and a combined hourly output of 100 pay yards.

With over 1900 hours of both hauler and scraper experience with these rigs, Victor Green, Pres. and Manager of the firm, says, "The D Tournapull is an *excellent* machine, *either as a 'Rocker or Scraper* unit. Its maneuverability and versatility make it one of the best machines in its class."

Ask your LeTourneau Distributor to show you why. Call or write him today!

Contractors used their "D" prime movers and scrapers to skim production from relocation of U. S. 21 near Charleston. Cutting 4 to 7 in. off the 24-ft. roadbed, the 2 rigs moved 1,000 cu. yds. per day.

Tournarocker, Tournahauler—Trademark
Tournapull, Carryall, Tournacrane—Trademark Reg. U. S. Pat. Off. H255-2

R. G. LeTOURNEAU, INC., Peoria, Illinois

HIGH-SPEED, RUBBER-TIRED EXCAVATING • HAULING • LIFTING EQUIPMENT

LETOURNEAU LET EQUIPMENT